MAY 1956

FIREMEN

SIXTY-FIRST YEAR • NATIONAL FIRE PROTECTION ASSOCIATION

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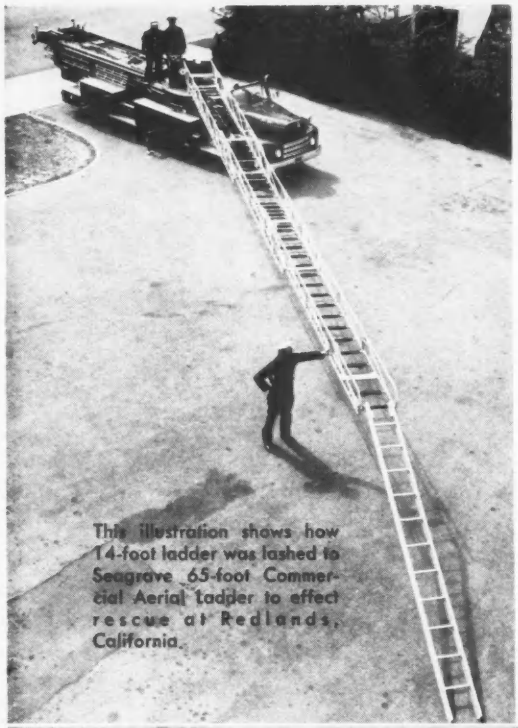


This illustration shows how 14-foot ladder was lashed to Seagrave 65-foot Commercial Aerial ladder to effect rescue at Redlands, California.

Teenager Saved From River

Plucked From Tiny Island By Ladder Truck

Redlands' new Seagrave fire truck with its hydraulic extension ladder was used in a spectacular rescue last night as an East Highlands teen-ager was picked from a tiny island where he was marooned for 2½ hours after his car was washed away by the swollen Santa Ana river at the Cone camp ford north of Mentone.

Deputy Sheriff Willard Farquhar and Earl Wilson, reserve deputy, drove from East Highlands to the stream to check the water level when they spotted George R. Favela, 16, marooned on a tiny rock island by the roaring torrent. It was then 6:40 p.m.

He was about 75 feet from the water's edge. At that point the water was over 100 feet wide.

Deputy Farquhar sent a radio message to the sheriff's office for rope and to Redlands for the ladder truck.

Chief Carl Rundberg directed the rescue operation. The truck was edged in as close as possible, the 65-foot hydraulic ladder was extended and a 14-foot ladder was lashed to it in order to reach the youth. By this time it was 8:45 p.m.

The youth said he was trapped by the swift water as he tried to drive across the river, which was swollen by the 24-hour rains. He was able to crawl from the car as the waters rolled it down stream.

Captain Dave Wilcox crawled out on the ladder and made the spectacular rescue. Also aiding Chief Rundberg was assistant Chief Walter Wagner, firemen Leonard Harder, Kenneth Witham and Roy Aldrich.

SEAGRAVE Commercial Aerial Ladder

1881-1956 . . . FOR 75 YEARS THE GREATEST NAME IN FIRE APPARATUS

Every day the Seagrave Commercial Aerial Ladder Truck is proving its versatility . . . This is the first quality safety-steel aerial ladder ever constructed to be in the budget reach of smaller cities and volunteer and industrial fire departments.

MAIL THIS COUPON

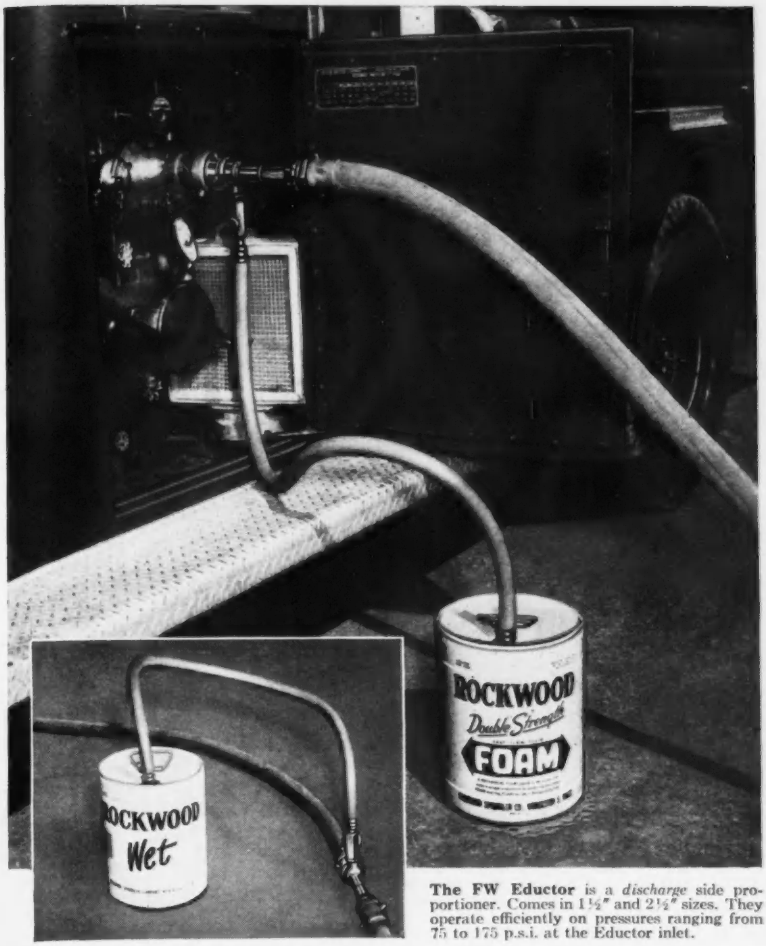
THE SEAGRAVE CORPORATION–Columbus 7, Ohio.

We are interested in your Seagrave Commercial Safety-Steel Aerial Ladder. Send complete information.

Name_____ Title_____

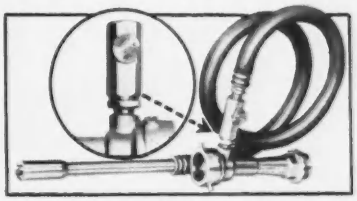
Street Address_____

City_____ State_____



The FW Eductor is a *discharge* side proportioner. Comes in 1½" and 2½" sizes. They operate efficiently on pressures ranging from 75 to 175 p.s.i. at the Eductor inlet.

Rockwood Eductors are designed for use with both the Rockwood FFF nozzle and the SG-60 nozzle with FF extension unit. SG-60 is an all-purpose nozzle that fights fires 5 ways — high velocity WaterFOG, low velocity WaterFOG (with applicator), FogFOAM, solid stream of water or of FOAM, FF extension unit discharges Rockwood FOAM in a solid stream or as FogFOAM, and covers large areas at one time.



The Variable FW Metering-Check Valve on the Rockwood Eductor is highly versatile, and is furnished with each FW Eductor. It incorporates both the Metering Valve and Ball Check Valve in one unit, and meters liquid into the hose line in any proportion from 1% through 6%.

Two for the road!

Protect against flammable liquid fire due to tank truck accidents

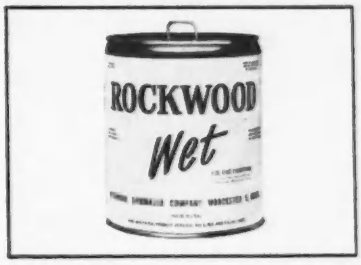
With more traffic on congested highways, more filling stations, more and more gasoline tank trucks in daily service, *your* municipality is in greater danger of a flammable fuel fire than it has ever been before. A sudden crash of a tank truck passing through your city streets tomorrow could confront you with a difficult-to-control flammable liquid fire.

The use of Rockwood FW Eductor reduces the danger of disastrous losses due to such a fast-spreading fire. Developed for operation with Rockwood's FFF nozzle and SG-60 nozzle with FF extension unit, the FW Eductor introduces Rockwood regular 6% FOAM liquid, Double-Strength 3% FOAM liquid or WET (1% or 2%) into the hose line, quickly controlling and extinguishing flammable liquid and other fires.

Rockwood FW Eductor is the simplest form of proportioning you can buy. Ideal for municipal fire departments, oil refineries and industrial plants, it can be attached between discharge gate of a fire truck and hose line, or between two lengths of hose.

Be prepared. Put this great fire fighter to work for you. Specify Rockwood FW Eductor when you order a fire truck.

Rockwood Double-Strength Foam Liquid, 3 parts mixed with 97 parts water, forms a solid FOAM blanket that quickly re-seals itself. Available in 5-gallon or 50-gallon drums.



Rockwood WET, 1 part mixed with 99 parts water, increases penetration and extinguishing action of water. Excellent for deep seated fires or where water is scarce. Can be used in proportions of 1% or 2% by volume for Class A and B fires. Available in 5-gallon cans or 50-gallon drums.

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Engineers Water . . . to Cut Fire Losses

PORTABLE FIRE PROTECTION DIVISION • 1012 Harlow Street, Worcester, Mass.

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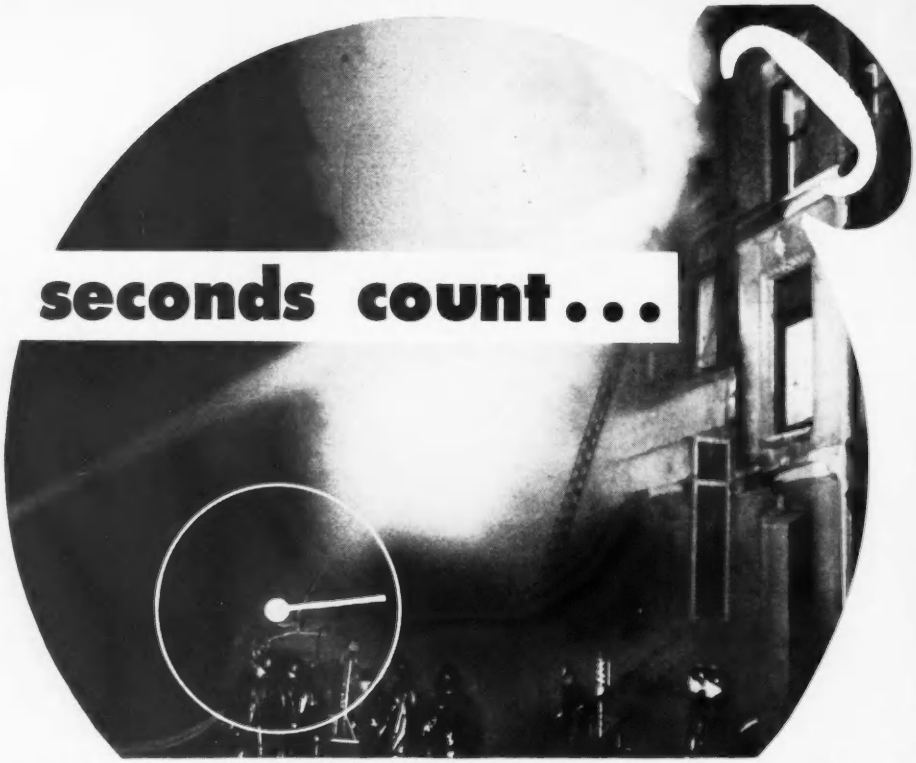

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Besides emergency and rescue work, an Audio Hailer is also a valuable aid for regular training sessions. Ask your supply dealer for a demonstration.

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FIRE CHIEF_____

CITY_____ STATE_____

Firemen

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PAUL R. LYONS — ASSOCIATE EDITOR
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Contents for May 1956 — *Page*

Philadelphia Moves Out Front! by Warren Y. Kimball 6
Philadelphia Granary Explosion, by Paul R. Lyons 10
Appointment in Ontario 14
Appointment in Pennsylvania 14
Fire Problems Occasioned by Aircraft, Part I 15
Auxiliary Water Supplies, by Horatio Bond 18
For Burn-Up Time! 20
"Sparky" in Reader's Digest 20
Elementary Radiation Safety 21
Fire Fighting for Householders 21
"Spelling Out" Fireground Procedure, Part II 22
Correction on Port Alfred 25
Aircraft Fire Fighting 25
Guests at FDIC 26
More Fire School Dates 26
Rural Pre-Planning Pays Off! 28
New Members in NFPA 30
Radiation Hazard Fire in Ontario 32
What's New in Fire Equipment? 34
Index to Advertisers 34

"For Whom the Bells Tolled"

The nation's fire services were shocked at the deaths of six New York fire fighters when the wall of a Bronx factory collapsed on March 4th. Tribute was paid to these men during funeral ceremonies when some 5,000 members of the New York City Fire Department, together with fire department representatives from many other Eastern states, marched in the funeral escort.

Every fire fighter will admit that he is a member of a risk-taking profession. No man on the fireground knows when one of his own decisions will place him in a position where he can be killed in the next moment. Similarly, few men know when correct decisions have led them from positions which might have meant death within the next few moments. One of the most serious responsibilities which falls to every fire officer is the judicious placement and movement of men under his command. Unfortunately, history does not record the thousands of decisions and commands of fire officers which have resulted in the safe positioning or withdrawal of their men. It is the unpredictable, the unavoidable, the ever-threatening tragic event which is brought to national attention. But every fire fighter knows the burden on the fire officer's heart and mind when such a tragedy affects men under his command.

Perhaps it is this understanding of the ever-present threat to fire fighters' lives which leads them to form the mystical bond of fraternity, aptly described in this editorial, extracted from the Hartford *Courant* of April 11.

> "There is a bond that unites all firemen, as there is one that forms a fraternity among the police. That bond is the common danger that is a daily part of their lives. The rest of us accept the work of these men as a routine part of the services that are provided for us. But each time the fire apparatus leaves a fire station, the lives of firemen are in jeopardy.
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> "Such tragedies as these are doubly sad because they strike down men who are usually the breadwinners for a growing family. They are the kind of men who are tritely called the backbone of our society. In these most recent tragedies, the death of the six men resulted in six widows and twenty fatherless children.
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NFPA Annual Meeting

Chiefs of NFPA member fire departments should refer to the April issue of the NFPA *Fire News*. It details the tentative program scheduled for the 60th Annual Meeting of NFPA which will be held in the Hotel Statler in Boston, June 4–8. In addition to the numerous technical sessions and social events already scheduled, the Thursday morning session will be devoted to discussion of fire department operations. Chief William Fitzgerald of Seattle, Washington, who is now President of the International Association of Fire Chiefs, will speak on current problems of the fire services. Fire Commissioners Francis X. Cotter of Boston and Frank McNamee of Philadelphia will report on activities in their respective departments. Chief Keith Klinger of the Los Angeles County Fire Department will also be a featured speaker in this session. Further details will appear in the May issue of the NFPA *Fire News* and in the June issue of FIREMEN magazine.

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— (*Philadelphia Fire Department Photo*)

Philadelphia Moves Out Front!

By WARREN Y. KIMBALL, Manager, NFPA Fire Services Department and Editor of FIREMEN Magazine

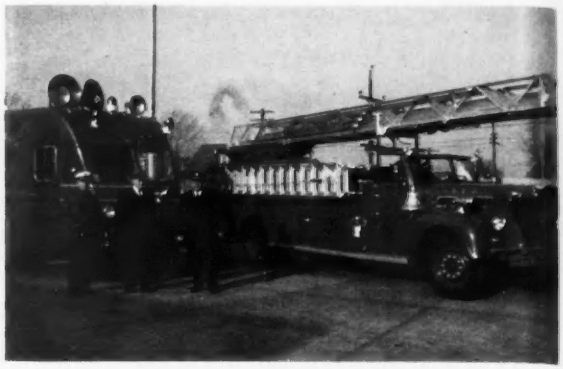
THE Philadelphia Fire Department for the past four years, ably headed by Commissioner Frank L. McNamee and Deputy Commissioner and Chief of Department George E. Hink, has adopted the policy that no "second-best" is acceptable in the fire service. The department has been extending every energy to make use of technological improvements that might be of advantage to the fire service.

The Departments' program has been "double barreled" in that fire prevention and fire protection are both given top billing. This was demonstrated when Philadelphia took top honors in the 1955 Fire Prevention Week Contest.

Recently, Assistant Chief of Department Joseph M. Clarke was advanced to Deputy Commissioner for Fire Prevention. For the past four years Chief Hink and Chief Clarke have served as a team in carrying out their lifelong dreams for making the Philadelphia Department second to none. Some time ago, inadequate financial support had contributed to a run-down condition of equipment, fire stations, and other facilities. These handicaps were swept away by an extensive program for replacement of apparatus and stations, which, together with a new spirit of progress, has given the department what it needs to adequately protect the city of over 2,000,000 people.

One of the features in the Philadelphia story has been the development of the officers' corps of more than 500 fire officers, as a practical means of implementing the modernization program through an effective development of the "chain of command." The officers now have their own publication.

The deputy chiefs of the Department's two divisions meet weekly with the chief of department and the assistant chief. They are informed of all new developments and in turn pass on pertinent information to top management. These conferences include critiques on all major fires.

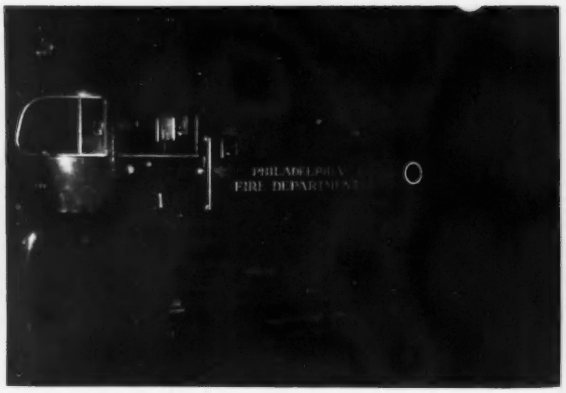


Left: Emergency communications van showing loud speakers on roof. *Right*: 100-ft. Maxim-Magirus aerial ladder. Manual ladders are carried on each side. Note assortment of plaster hooks mounted on main ladder.

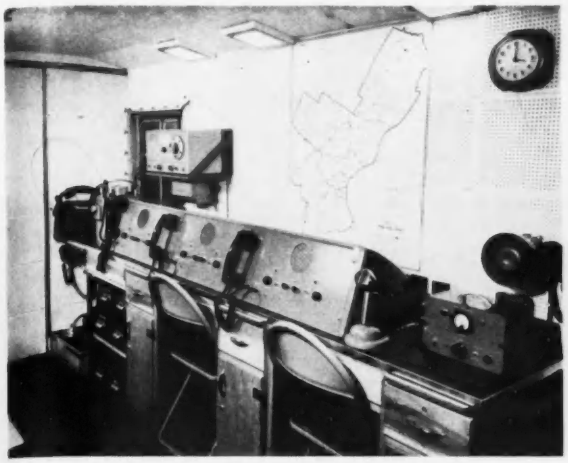
Regularly each week the deputy chiefs meet with the battalion chiefs in their divisions and keep these officers informed of new developments. In turn they receive suggestions and information from the battalion chiefs. Battalion chiefs then meet with captains so that there is a complete two-way circulation of information from headquarters to the fire companies each week. In addition the Department publishes "PFD News" to keep all members and other persons interested in the Department well informed.

SINCE February, 1954, radio-equipped fire companies have been making daily inspections. Every Monday through Friday, 35 companies are out inspecting from 9 a.m. to 12 noon and another 35 companies inspect from 12 to 3 p.m. The check sheet on page 8 is used and the "red check" mark in any square means

Fire prevention gets a big play. This fire house features a cut out of "Sparky" with a Fire Prevention Week message.



This fire department field ambulance responds to second alarms. It supplements emergency equipment carried on 10 rescue companies.



Interior of communications van which responds to all second alarms. Facilities include 2-way radio for fire, police, public works, radio telephone, land line telephone, public address system, map of fire stations, inventories of emergency personnel and equipment. In a disaster much of the work of a central station can be handled with this equipment. The control van is headquarters during a major fire and emergency for officials representing building, health, and water departments. Only persons having permanent or temporary authorization from the control van can pass fire lines.

Part of the signal equipment in the communications and control van equipped and operated through the Electrical Bureau. In use each service provides its own operators familiar with the routine of individual municipal departments.

a fire or life hazard spotted, and the fire department follows up on the hazard. The citizens have been informed as to the importance of eliminating the hazards so checked. In 1954, 67,000 fire checks were made, and a 3½ million dollar reduction in fire losses resulted as compared with the previous year. The department also credits improved training and equipment as major factors in the improved loss experience.

Prior to the new program for the fire department, the fire insurance grading of Philadelphia dropped to 4th Class. It has already moved up to Class 3. An important part of the program has been the enlisting of public support and interest. This included organization of a Citizens' Council for Fire Prevention, organization of a citizens' Fire Reserve of 700 men to assist in any major emergency or disaster. Three fire fighters are assigned to work in the public and parochial schools. Fifteen fire fighters are detailed to the Department of Licenses and Inspection for work in high value areas. There is also a program designed to reduce life hazards in slum areas.

Formerly Philadelphia had several "pipe line" companies carrying 3½-inch hose for use in the areas served by high pressure fire mains. The service of these companies was rather limited. They were replaced by providing 20 engine companies with 3½-inch hose and heavy stream equipment for use at any large fires where such equipment is needed.

Through relocation and construction of 20 new fire stations there has been a reduction in the number of fire houses from 88 to 81. The new stations are of the single floor "bungalow type" and have the latest facilities for the convenience of the men.

A new assignment card is being prepared which will have assignments up to six alarms. A "skip system" will be utilized which keeps certain companies in quarters in each part of the city to reduce the amount of "covering" on multiple alarms.

The department has purchased Maxim-Magirus 100 ft. aerial ladders. These have been found very useful in negotiating the narrow streets of the old sections of the city. The ladders have automatic stabilizers. Each of the 30 aerial ladder companies is equipped with a ladder pipe and each week practices with this equipment so that it can be placed in service with a minimum of time. Former water towers have been eliminated. As part of the annual apparatus replacement schedule, the department recently received three 85 ft. Maxim tractor-trailer aerial ladders. Six new Mack pumpers have recently been delivered. Four new pieces are equipped with John Bean high pressure fog equipment.

There has been much improvement in the "minor appliances" carried on the apparatus. Ladder trucks carry portable generators and lights, salvage and roof covers, wet water and foam eductors. New lightweight Akron Brass monitor pipes have been obtained. Ladder trucks have also been equipped with "Indian" fire pumps.

Every fire company carries self-contained Scott "Air-Pak" masks with extra bottles.

The department makes extensive use of fog nozzles of various sizes. Each engine company has Rockwood all-purpose nozzles for booster, 1½-inch hose and 2½-inch hose. Fog applicators are frequently used on fires in concealed spaces such as cocklofts and in basements. Large fog nozzles are used on ladder pipes as circumstances dictate. Inside fires in residential properties are almost invariably fought with fog nozzles on high or low pressure booster lines or 1½-inch hose lines.

One of the most valuable and perhaps unique "companies" in the department is the Special Service Company. This unit, composed of fire fighter-mechanics, performs many useful services. Members of the SS company respond to every working fire or multiple alarm. They man a variety of special apparatus and equipment. This company also provides fireground

Here is the "red check" sheet used by fire companies to eliminate fire and life hazards in their districts.

FIRE ✓ CALL WI 6-6700 (ext. 28 OR 12 FOR MORE INFORMATION

CHECK ITEMS CHECKED AND YOU WILL ✓ FIRES

DATE | CHECKED BY | COMPANY NO.

NAME OF OWNER | ADDRESS OF PROPERTY

ADDRESS OF OWNER | NAME OF TENANT

OCCUPIED AS | OCCUPIED BY (NO. OF PERSONS) | NO. OF UNITS | YOUR NEAREST FIRE ALARM BOX #

1 PANIC KILLS Can you, your customers, tenants and employees get out as easily as they got in?

A. ENTRANCES & EXITS
- ☐ OBSTRUCTED
- ☐ NOT OR POORLY MARKED
- ☐ NOT OR POORLY LIGHTED
- ☐ DOORS NOT OPENING WITH TRAFFIC (where required)

B. HALLWAYS & AISLES
- ☐ OBSTRUCTED
- ☐ NOT WIDE ENOUGH
- ☐ STAIRWELLS & SHAFTS NOT ENCLOSED
- ☐ VERTICAL SHAFTWAYS NOT MARKED

C. FIRE DRILLS
- ☐ NOT HELD MONTHLY
- ☐ JANITOR OR WATCHMAN NOT ON DUTY
- ☐ DO NOT KNOW LOCATION OF NEAREST ALARM BOX

D. EMERGENCY EXITS
- ☐ FIRE ESCAPE IN POOR COND.
- ☐ NO FIRE ESCAPE
- ☐ NO FIRE TOWER
- ☐ NO FIRE ROPES IN 3RD FLOOR BEDROOMS

2 FAULTY HEATING SYSTEMS are a major cause of fire.

A. TYPE OF HEATING SYSTEM
- ☐ COAL—PORTABLE
- ☐ GAS—PORTABLE
- ☐ OIL—PORTABLE
- ☐ ILLEGAL KEROSENE STOVE
- ☐ ILLEGAL GASOLINE STOVE

B. FURNACE ROOM
- ☐ INACCESSIBLE
- ☐ NOT ENCLOSED
- ☐ ASHES NOT IN METAL CAN
- ☐ FUEL OF RUBBISH
- ☐ FUEL SUPPLY NOT PROPERLY STORED

C. CONDITION OF HEATER, FLUES & PIPES
- ☐ FLUES OR CHIMNEY DIRTY
- ☐ FLUES TOO CLOSE TO WOODWORK
- ☐ PIPES OR RADIATOR BROKEN
- ☐ FURNACE IN DISREPAIR
- ☐ COMBUSTIBLES NEAR STEAMPIPES
- ☐ NO SAFETY SHUT-OFF SWITCH FOR OIL BURNER (installed or replaced after 1949)

3 CLEANLINESS & ORDER Most fires result from unclean conditions and a lack of order or neatness.
- ☐ HIGH GRASS & WEEDS
- ☐ COMBUSTIBLE DECORATIONS
- ☐ ACCUMULATED RUBBISH
- ☐ NO METAL CANS FOR ASHES
- ☐ RUBBISH IN YARD
- ☐ RUBBISH IN SHAFTS
- ☐ OILY RAGS
- ☐ ILLEGAL TRASH BURNER IN YARD
- ☐ SHIPPING MATL. POORLY STORED
- ☐ INFLAMMABLES IMPROPERLY STORED
- ☐ MERCHANDISE NOT STORED NEATLY
- ☐ "NO SMOKING" RULES NOT OBSERVED
- ☐ EMPLOYEE LOCKERS FILLED WITH REFUSE
- ☐ OVERLOADED OR OVERCROWDED ROOM

4 WIRING, LIGHTING EQUIPMENT, APPLIANCES – 15% OF ALL FIRES
- ☐ EXPOSED WIRING
- ☐ OVERLOADED EXTENSION
- ☐ IMPROPER FUSE
- ☐ DIRTY MOTORS
- ☐ NO EMERGENCY LIGHTING
- ☐ COMBUSTIBLES NEAR MOTOR
- ☐ INSUFFICIENT LIGHTING IN HALLS
- ☐ IMPROPER WIRING

5 FIRE FIGHTING EQUIPMENT Fires occur at odd hours! Can you operate your detection, alarm, and extinguishing devices?

A. WATER BUCKETS
- ☐ EMPTY
- ☐ TOO FEW
- ☐ NONE

B. FIRE EXTINGUISHERS
- ☐ EMPTY ☐ NOT TAGGED
- ☐ TOO FEW ☐ NOT DATED
- ☐ NEEDED UPSTAIRS
- ☐ IMPROPER TYPE ☐ NEEDED BASEMENT
- ☐ NOT CHARGED

C. FIRE DOORS
- ☐ OBSTRUCTED
- ☐ NO FUSIBLE LINKS
- ☐ NON-OPERATING

D. FIRE ALARM DEVICES
- ☐ NON-OPERATIVE
- ☐ NOT PLAINLY MARKED
- ☐ INACCESSIBLE
- ☐ NO FIRE ALARM
- ☐ NOT EXTENDED TO BUSINESS OCCUPANCY

E. SPRINKLER SYSTEM
- ☐ VALVES NOT MARKED
- ☐ VALVES NOT OPEN
- ☐ VALVES NOT ACCESSIBLE
- ☐ HEADS OBSTRUCTED
- ☐ HEADS CORRODED
- ☐ SYSTEM NOT DRAINED
- ☐ SNAPS IN POOR CONDITION
- ☐ POOR RUBBER RINGS

F. STANDPIPES
- ☐ NOT ACCESSIBLE
- ☐ SNAPS IN POOR CONDITION
- ☐ RUBBER RINGS IN POOR CONDITION
- ☐ CAPS NOT IN PLACE
- ☐ NON-STANDARD CONNECTION
- ☐ RESERVOIR TANK EMPTY
- ☐ HOSE IN POOR CONDITION

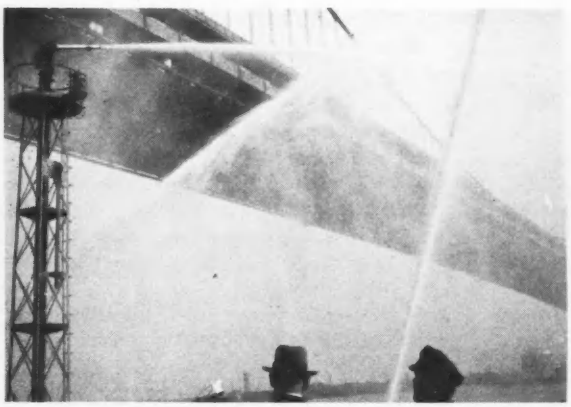
6 MAINTENANCE
- ☐ BROKEN WINDOWS
- ☐ BROKEN PLASTER
- ☐ LOOSE WALL PAPER
- ☐ POOR VENTING
- ☐ POOR RAILING OR STAIR TREADS
- ☐ DUST NOT UNDER CONTROL
- ☐ UNPROTECTED WINDOWS
- ☐ GASOLINE IMPROPERLY STORED
- ☐ NON-FIREPROOF SHED OR BAY

7 SPECIAL HAZARDS
- ☐ IMPROPER OR DIRTY RANGE DUCTS
- ☐ SPRAY BOOTH, FLICKER BOOTH, DIP TANKS IMPROPERLY PROTECTED
- ☐ PAINTS, VARNISHES, ETC. IMPROPERLY STORED
- ☐ OTHER INFLAMMABLE GASES & LIQUIDS IMPROPERLY STORED
- ☐ IMPROPER STORAGE IN BASEMENT

REMARKS

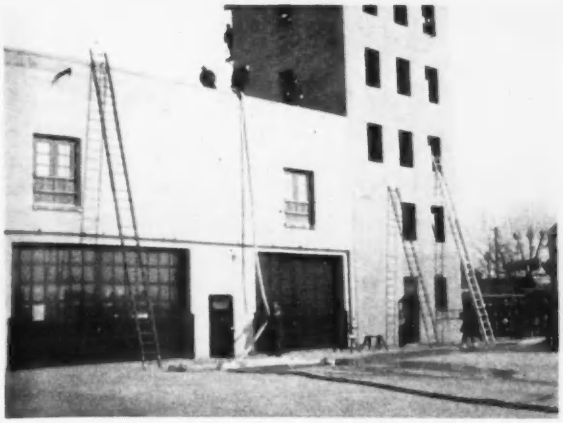
75-24 REV. 9-54

THIS ✓ IS A PUBLIC SERVICE OF YOUR PHILADELPHIA FIRE DEPARTMENT



Fireboat streams operating from berth beneath Delaware River Bridge. The boats carry special rail pipes which permit effective operation of streams under piers and wharves. Swivel type reels carry 1½, 2½ and 3½-inch hose.

Two of the three new Diesel powered, single screw, highly maneuverable fireboats obtained since World War II protect the Delaware River waterfront. The third boat is on the Schuylkill. Power operated masts may be lowered as at right.



Philadelphia Fire Department training school and drill tower. Apparatus of companies in training may be housed on the first floor. Second floor includes classrooms and office of Battalion Chief Joseph Meskill, department training chief.

Men wearing masks connect to the life line when working in smoke, by means of a short rope with hooks. One end is snapped to the belt and the other end hooks over the life line. This provides freedom of action but prevents men from getting lost.

maintenance and in-quarters maintenance of apparatus and equipment. They annually test all the pumps and hose in the department.

The 88 company has housed in its station a complete mobile field hospital which is taken to all second alarms for use of medical personnel. It is also used in bad weather to provide shelter for fire fighters needing oxygen or just rest and warmth.

Another truck operated by this company, and known as "S-100," is a foam and wet water truck. The apparatus has a built-in proportioner and discharges wet water either through booster reels or big lines as needed. Chief Hink reports that the use of wet water has greatly reduced the time required for extinguishment and overhauling at many major fires where stock was of such nature as to resist penetration from ordinary hose streams.

Also operated by this company on special call is the 88-99 or "Giant Deluge." In addition to two conventional portable monitor nozzles the unit carries a huge hydraulic gun manufactured by Chiksan, maker of hydraulic guns used in placer mining.

This nozzle was developed to throw a master stream 250 feet or more for use at large industrial or chemical plants where close approach is impossible or for use at major fires in lumber yards or large buildings. It has demonstrated its ability to knock down ordinary walls at close range.

Another truck operated by "88" carries "cascade" systems for recharging air and oxygen equipment on the fireground. At working fires the company sees that crews using masks have fresh bottles of air at hand as needed.

The Philadelphia Fire Department stresses training and has a well-equipped school which is directed by Battalion Chief Joseph F. Meskill. Various fire officers are rotated through the school staff so as to familiarize them with the program. Probationary fire fighters get ten weeks training at the school and then are assigned to busy companies. Also daily, two engines and a ladder company report to the school for refresher training. If a second alarm comes in, these companies respond, providing additional assistance.

One interesting new development is a new type of rope attachment whereby individual fire fighters may attach themselves to a life line when using masks and at the same time maintain mobility for action.

S-99 "Giant Deluge" with power operated "Chiksan" nozzle mounted on former "pipe line" or high pressure truck. This provides one of the largest fire nozzles mounted on any land fire apparatus.

The S-100 truck, operated by the Special Service Company, carries wet water and foam equipment and special extinguishers including "Metal-X" for metal fires. The pump has been specially modified for proportioning wet water.

PHILADELPHIA GRAIN DUST EXPLOSION

by Paul R. Lyons, Associate Editor of Firemen

Grateful acknowledgement is made to Battalion Chief William J. Eckles, Fire Marshal, Philadelphia, Pennsylvania, and to the Middle Department Association of Fire Underwriters, in the same city, for assistance in the preparation of this report.

SHORTLY after 8 P.M. on March 28, 1956, a violent explosion in grain elevator property sent shock waves smashing through the south central portion of Philadelphia, Pennsylvania. It blasted into rubble the three- and four-story brick, wood-joisted buildings owned by the Tidewater Grain Company at 31st and Market Streets. It caused the sudden death of two workmen, with a third found dead underneath the rubble some eight days later, and injuries to more than 75 other persons in the vicinity. It caused damage for approximately ten blocks in one direction and five blocks in another, with replacement and repair costs of all buildings estimated in the vicinity of $3,000,000. It also tested and found suitable Philadelphia's unique "Disaster Plan" — an operation featuring six-alarm response by the Fire Department and coordination of the major service departments in this city of more than 2,000,000 population.

The precise cause of the explosion is still undetermined. The most plausible explanation was that its violent power originated when grain dust was thrown into suspension and then ignited. Several theories of how this occurred have been advanced.

The particular design and shape of the buildings involved did not provide sufficient venting as the explosive power developed. The sound and flash of the blast were noticeable in all directions, and shock tremors were felt some twenty miles from the site. Directly across Market Street, the ten-month-old, five-million-dollar, four-story building of the Philadelphia *Bulletin* took a heavy portion of the shock wave and suffered perhaps the most costly damage of any individual structure in the vicinity.

Had the blast occurred three hours earlier when the evening "rush hour" traffic was dense, one of the highest death or injury tolls in the history of grain elevator explosions might have resulted.

Description of Property

Records indicate that the buildings on this site dated back to 1860. Through the years, and when the blast occurred, they were used chiefly for the handling and storage of corn, various grains, soybeans, and poultry feed. These materials were dried, bagged, and stored in the usual preparations for distribution and shipment.

The Tidewater Grain Company property covered an area measuring 150 ft. wide and 250 ft. deep which fronted upon Market Street, with Ludlow Street at the rear. There were a three- and four-story main building of brick, wood-joist construction, a four-story wood-frame millhouse with corrugated metal penthouse, a seven-story reinforced concrete working tower, eight reinforced concrete cylindrical silos approximately 85 ft. high with intersectional storage bins, and a 130 ft. high grain elevator at the rear of the property. A fire department representative stated that in the early days of the property's existence, this section of Philadelphia was rather sparsely settled. Now it is well covered by industrial, warehouse and institutional buildings.

Approximately in the center of the Tidewater property and adjacent to a four-story cylindrical concrete storage bin known as "Bin 21" was a brick-walled drying section. This housed two gas-fired driers. An overhead fire door had been installed to protect the bin section from the drier operations. At the present time information is not available on venting facilities, although the west side of the main

(Left) Fire department action on the Ludlow Street side of the Tidewater Grain Company. Sixteen hours after the explosion occurred some sixteen 2½-in. hose lines were still in operation. Three days later four "watch lines" were still being used and afterwards a single line was kept in operation for more than two weeks. Fire officers felt that the tons of bagged grain still in the rubble were likely to ignite spontaneously when the kernels began to swell after contact with water. (*Wide World Photo*)

building featured wired glass windows on each floor, and there were plain glass windows on each floor of the rest of the main building. General construction features of all buildings (floor area) were said to be approximately 19 percent fire resistive, 21 percent plank and timber, and 60 percent wood-joist construction. A report stated that openings which permitted passageway through the several buildings were partly unprotected and partly protected by sub-standard fire door enclosures.

Tidewater Grain Company as it appeared before the explosion. The drier was located on the ground level just to the right of the circular bin at lower left. (*Wide World Photo*)

Surrounding Property

Across Market Street to the north is the four-story basement and subbasement Philadelphia *Bulletin* building. This is of concrete on steel frame construction with concrete floors and roof. Its length runs parallel to Market Street and it measures approximately 250- and 300-ft. deep by 950-ft. long. The four-story office section of the building is directly opposite the Tidewater property. The new building has 12-inch cinder block and brick-faced curtain walls and other cinder block, plaster covered walls approximately 6-inches thick. A light colored brick veneer covers the exterior walls of the building. Just 100-ft. separates the property lines of the *Bulletin* Building and the Tidewater installation.

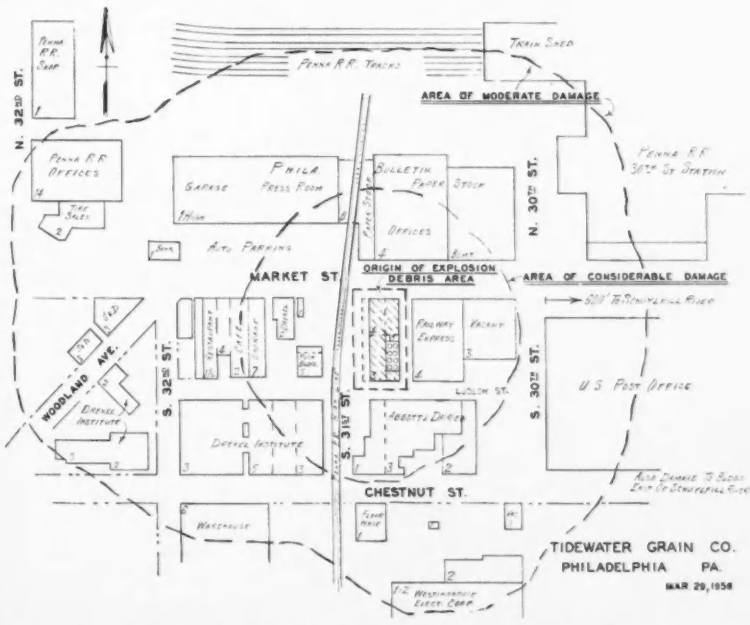
Immediately east of the Tidewater Grain Company plant is a four-story fire resistive Railway Express building and adjacent to this is a three-story brick building which was vacant at the time the explosion occurred.

To the south is the one-, two-, and three-story brick building housing the Abbott's Dairies and which featured both plain and wired glass windows. This is a general office and warehouse building which has a truck loading terminal at the ground level of the Ludlow Street side.

Immediately to the west of the Tidewater property and running within 50-ft. of the building front is the High Line of the Pennsylvania Railroad. The tracks are on an overhead elevated structure with overhead lines and electric power transmission equipment handling 11,000 volts and 132,000 volts.

To the southwest of the Tidewater Company is Drexel Institute, a three- and five-story reinforced concrete structure which, at the time of the explosion, was occupied by students taking night courses. Just to the north of this Drexel Institute are a number of brick structures ranging in height from one-and-a-half stories to seven stories. The five-story Pugh building which was nearest to the blast on this side was unoccupied. Other buildings in the vicinity are used for storage, for a restaurant, and for miscellaneous occupancies.

All of the buildings mentioned above were in the area of severe damage. Beyond this area, buildings within 500- to 1,000-ft. distance from the explosion site suffered moderate to light damage, principally shattered windows and dislocated or broken ceiling areas. The 30th Street Station of the Pennsylvania Railroad located some 600



Sketch of area affected by blast. Crosshatched section in center indicates property of Tidewater Grain Company. Drier was located approximately in small square just above the eight circles which indicate the vertical bins. Explosive and implosive shock waves affected both the Bulletin and the Railway Express Buildings. "Freak" damage was caused for as much as ten blocks away. A cinder block wall in the rear of the Bulletin building (approximately just above the "u" in Bulletin) was severely cracked by shock effects. (*Sketch by Middle Department Association of Fire Underwriters.*)

feet to the northeast had windows smashed for its block length on the grade floor. The fourteen-story building which housed the Pennsylvania Railroad offices and which was located some 700-ft. northwest of the explosion site also suffered severe damage which was estimated in the vicinity of $100,000.

Rear of property showing view of grain elevators and storage bins. Bin 21 is the circular tower at left center. At right is a portion of the building which housed Abbott's Dairies. Three loaded freight cars were on a siding at left. These tipped toward the blast origin and were severely damaged with their contents spilling out on the ground. (*Wide World Photo*)

Explosion, Fire, and Effects

According to reports there were five employees and four truck drivers in and around the Tidewater Grain Company when the explosion occurred. Four employees and two truck drivers survived the blast, but all were injured. Two of the other three men were killed then and the third was found dead about eight days later.

One of the employees, Samuel Purdy, the acting superintendent of the granary, was quoted as saying that just before the explosion occurred he was trying to light a pilot light for a hot-air chamber drier for grain in the central part of the building. He stated that a pilot light of one drier was burning, but that he was attempting to get the other one into operation. Although there was an automatic control valve for igniting the pilot, the acting superintendent tried to operate the valve manually for several minutes. Suddenly there was a flash and Purdy was severely burned. As he turned to warn the other employees in the vicinity, the major explosion occurred which toppled the buildings. As yet it has not been determined how much time elapsed between the initial flash at the drier and the secondary explosion. The other two employees who were working with Purdy were in the process of shovelling remnants of grain from Bin 21 which was practically empty just before the explosion occurred. Several witnesses claimed, a number of hours after this disaster, that they saw two distinct flashes which would indicate that a primary and secondary explosion took place within the grain elevator property.

Speculations of the cause of the explosion were: that a flashback from a drier threw sufficient dust into suspension and provided an ignition source; that a grain conveyor belt broke in the mill house, disturbing the dust which was ignited by some unknown source; that an electric motor atop the working tower, which had been giving trouble had provided the necessary spark; or that a static spark, heating of an electric motor or simply an open flame had been the heating source when the dust conditions were such as to lead to explosion.

Immediately after the explosion, fire broke out in the pile of rubble and timbers that settled on the lot. Flames also involved mastic covered asbestos on steam lines of the Pennsylvania Railroad High Line. It was also stated that an 8-inch gas main running underneath the property was damaged and supplied gas fuel to the flame.

Fire Department Response

At fire department headquarters more than a mile and a half away, Deputy Chief George L. Churchill was Acting Chief of Department in the absence of Deputy Commissioner George E. Hink, who was on a vacation trip. In headquarters, the explosion sounded as though someone had slammed a heavy door. Immediately after this sound, Box 597 at 34th and Market Streets was struck. Within 10 minutes, three additional alarms were struck and the city of Philadelphia's "Disaster Plan" was put into operation.

On the present running cards, first alarm assignments on this box call for response from 3 engine companies, 2 ladder companies, 2 rescue companies and the Chiefs of the 5th and 11th battalions.

Battalion Chief Edwin L. Grugan and Deputy Chief William Haas responded. The second alarm was pulled at 8:09, and Chief Haas pulled the 3rd and 4th alarms at 8:16. Chief Churchill already was responding to the fireground on receipt of the second alarm. He subsequently ordered the 5th and 6th alarms to be struck at 8:23.

Under the "Disaster Plan" setup now in operation in this city, all commissioners of the major city service departments respond to all 4th alarm fires. For such emergencies, Commissioner of Water Samuel Baxter has been chosen to coordinate the activities of each of these departments through the various other commissioners. Included in such response are the Commissioners of Welfare, Streets, Police, Superintendent of Mechanical Equipment, and, of course, Commissioner Frank L. McNamee of the Fire Department.

On the fireground, each of these individuals coordinates action of various department representatives and services. For example, the Commissioner of Welfare supervises response by the Red Cross and Salvation Army groups. The Commissioner of Streets orders the supply and utilization of shovels, trucks, cranes, loaders, etc. The Superintendent of Mechanical Equipment supervises the use of building wreckers and other heavy duty equipment and keeps trucks moving to and from the alarm site. The Police Commissioner coordinates the activities of officers of his department, including the supervision of traffic, ambulance service,

and operation of emergency patrol cars. Reporting to the Police Commissioner is the Police Surgeon who mobilizes the doctors necessary for the disaster site and supervises the establishment of mobile hospitals, first aid and rescue stations.

Also utilized as part of this "Disaster Plan" is a "Command Car," a mobile unit operated by the Civil Defense Agency. This vehicle also responds to the fireground on 2nd alarms or greater, (see page 8) and is used to channel all radio communications from the various departments and agencies. This bus-type vehicle has radio transmission and receiving equipment which can operate on all radio frequencies used by the service departments. Through this vehicle, any of the service departments can get immediate communication through radio or telephone channels and can establish radio contact with any airplanes or helicopters which may be needed in an emergency.

For the fire department, the first battalion chief's car which responds to a multiple alarm fire is used as the control car for fire department communications at all times. Once the command car arrives on the fireground, radio communications are relayed from this chief's car to the command car. Supervising communication activities within the command car is Philadelphia's Chief of the Electrical Division, Eggert Grun.

Another fire department feature of this disaster plan is that the Deputy Chief of either the first or second division responds to the fire alarm office. There he supervises the movement of responding companies and the assignment of other fire companies who are needed for other possible alarms or simply for "covering" action.

On the Fireground

Chief Churchill is an advocate of "cheap water." In pre-planning possible fire sites, he considers making maximum use of the Schuylkill and Delaware Rivers and other streams which flow through the city. Despite the fact that this disaster occurred in the high-value district where there were ample hydrants and good low and high pressure water supply, he ordered Fire Boat No. 3 to come up the river at 8:32 p.m. This was a precautionary measure since the nature of the blast indicated need of large water supply and there was the possibility that water mains in the vicinity could have been broken.

At this time, fire fighters had some twenty-four 2½-inch lines in action using 1¼-inch tips. Eight portable monitors were also spotted around the fireground. One exemplary feature of the disaster plan mobilization was that electric power for the High Line had been cut off almost immediately so that fire fighters were able to extinguish flames which were burning the insulation covering and found it possible to get one 2½-inch line on the elevated structure and attack the main fire.

As soon as Fire Boat No. 3 pulled into its location on the Schuylkill River, its crew laid four 3½-inch lines to the fireground which was approximately 700 feet away. Each of these lines supplied three 2½-inch lines, with half of them directed from the south side of the involved buildings and the other half directed from the north side in front of the *Bulletin* building. (For such emergencies, the department has equipped each of its 20 high-pressure companies with 15 lengths of 3½-inch hose. These have been found particularly useful when fire boats are brought into action, since the department makes extensive use of deck guns and portable monitors.)

While first responding fire fighters were involved in extricating the persons who had been hurt or buried beneath rubble, considerable fire developed in the timbers and wood fragments piled on the property. This created a brief exposure problem, but since sufficient lines were brought into play, the fire was well controlled.

An 8-inch gas main beneath the building was reported to have leaked this fuel into the fire and gave fire fighters some concern until gas company representatives sealed the pipe.

A few 1½-inch hand lines were used to wash down debris which had accumulated on a ramp of the *Bulletin* building. The wisdom of Chief Churchill's decision to use fire boat No. 3 is borne out by the fact that this vessel pumped some 4,649,000 gallons of water during more than 22 hours of operation. On the morning of March 29, it was discovered that a 24-inch water main on Market Street had also developed a leak, perhaps from the explosion effects.

Other response in the six alarms included: (2nd alarm) 3 engine companies, 1 ladder company, and chief of the 7th battalion; (3rd alarm) 4 engine companies, 1 ladder company, and chief of the 4th battalion; (4th alarm) 4 engine companies, 1 ladder company and chief of the 2nd battalion; (5th alarm) 4 engine companies; and (6th alarm) 4 engine companies.

Altogether, some 17 chiefs of deputy and battalion rank, 81 company officers and 513 fire fighters were utilized in the 24 hours of action which was required. Some 50 pieces of fire apparatus were mobilized on the fireground in addition to police cars, ambulances, trucks, and other vehicles from the other city departments. Several hundred police officers kept all traffic and sight-seers several blocks distant from the fireground, thus permitting fire apparatus and the

Market Street side showing damage to Railway Express Building. At the time the explosion occurred a truck was being loaded with grain in an alley just to the right of this building. (*United Press Photo*)

(Right) View of first floor interior of Philadelphia *Bulletin* Building which suffered damage estimated at $1,000,000. Plate glass windows were shattered, window frames twisted, exterior and interior doors were blown from their fastenings, and concrete block partitions were blown down or ruptured. Suspended acoustical tile ceilings were buckled and dropped from their metal hangers and air conditioning ducts were also blown down. Electric light fixtures were also damaged and exterior walls were said to be cracked or sprung. An engineering survey is now being conducted to determine full extent of structural damage. *(Wide World Photo)*

rescue and wrecking equipment to operate in complete freedom.

According to the fire department reports, weather conditions at the time of the explosion featured a five-mile wind, a temperature of 38°F, and a humidity of 43 percent.

Damage to Surrounding Property

It will take considerable time before blast damage to surrounding buildings can be evaluated. Some of the damage to the Philadelphia *Bulletin* Building is outlined in the caption at upper left. The Railway Express Agency, Inc., building adjacent to the Tidewater property was also severely shaken. This 4-story and basement unsprinklered fire-resistive building received both implosive and explosive shock waves. Windows were blown out and in. Numerous 4-in. hollow tile partitions were toppled or badly damaged. Upper floor skylights were blown out, exterior and interior doors damaged, elevator machinery was put out of commission, sections of exterior walls were blown out or bulged, and the basement was flooded with water. Equipment and contents in the garage section were blown across the floors and lighting fixtures and office furniture and equipment were damaged.

Some 1800 evening school students were attending the Drexel Institute of Technology when the explosion occurred. Many were knocked down and injured by shattered glass and falling plaster. An estimated 90 percent of the classrooms and 70 percent of the windows were damaged. Partitions and suspended ceilings were ruptured, skylights were shattered and a 2300-volt electric service line was temporarily disconnected. Other buildings belonging to the Drexel Institute also suffered damage.

Abbott's Dairies, Inc., also received a heavy portion of the shock wave. Windows and metal sashes on the north and west wall were blown out, skylights lifted off and destroyed, metal and glass partitions in offices on the second and third floors were moved out of line, and the tile and cork wall of a cold storage room on the fourth floor was pulled out and ruptured. Glass and debris covered many sections of the building and halted operation of the sterilizing equipment in the pasteurizing room.

At least nine other buildings, stores and warehouses in the immediate vicinity suffered moderate to heavy damage. Blast waves, following defilades in the neighborhood, ruptured glass and window frames up to one mile distant. Numerous autos were damaged by falling debris and glass.

NFPA Codes for the Prevention of Dust Explosions

The National Fire Protection Association through its Committee on Dust Explosion Hazards, under the chairmanship of Hylton R. Brown of the Bureau of Mines, United States Department of Interior, has developed a series of codes dealing with the prevention of dust explosions in various industries.

Grain dust is covered by several of these codes all of which are published in Volume II of the National Fire Codes and are also available in separate pamphlet form. The Code for the Prevention of Dust Explosions in Terminal Grain Elevators (35 cents) would cover a situation such as that in Philadelphia. There is a long record of disastrous explosions in grain elevators in this class with extensive loss of life over many years. In each such explosion, however, investigation has shown that there were extensive deviations from the best practice as reflected in the NFPA codes.

These codes cover structural features including provisions for the venting of explosions. Experience shows that where explosion relief vents are provided of sufficient size and properly arranged the initial force of an explosion will be dissipated before there is opportunity to build up the disastrous pressures associated with the secondary explosion effects. The standards also deal with elevators and other items of equipment, grain driers, dust control for grain handling equipment, removal of static dust, electrical equipment, fire extinguishing equipment, and various related matters.

Volume II of the National Fire Codes may be obtained from NFPA for $6.00 (list price) per copy, with discounts available to members of the Association. Individual standards of this volume may also be obtained from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts. Write for free price list. — Ed.

Appointment in Ontario

NFPA member Martin S. Hurst was appointed as Deputy Fire Marshal of Ontario on March 1. He succeeds J. E. Ritchie, who retired from that position after serving with the Ontario Fire Marshal's Office since 1919.

Mr. Hurst has been with the office since 1949 and has been Assistant Deputy Fire Marshal since 1951. Previously he served ten years with the Toronto Fire Department including 2½ years overseas during World War II as an officer in the Corps of Canadian Fire Fighters who were with the British National Fire Services.

Appointment in Pennsylvania

ARTHUR W. "Art" Espey recently was appointed Advisor, Fire Service Training, Public Service Institute, in the Pennsylvania Department of Public Instruction. He will have offices at the Pennsylvania Fire School in Lewistown.

New "Sparky" Ad

Watch for this new advertisement in the national fire prevention campaign sponsored by NFPA in cooperation with The Advertising Council. Proof sheets will be sent to all daily and weekly newspapers throughout the United States and are also available from the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Massachusetts.

Do You Gamble With Fire?

If your answer to the question is a quick NO, think again! You may be gambling with fire every day.

Do you think that by obeying a few rules you are protecting your home and family from the danger of fire? If you do, you're a real gambler, all right!

The only real way to prevent fire is to become aware of the causes of fire. Make yourself fire conscious! The man who is careful not to smoke in bed can lose his family, his home and his own life as well, simply because the curtains in the kitchen were hung too close to the stove.

Few fires start by chance. Most fires are caused by ignorance or carelessness. A *fire-informed* family is familiar with fire—its uses and benefits as well as its dangers. Parents should make sure their children's fire education is not left to chance.

Some good rules to keep in mind are: Don't smoke in bed—Use only non-inflammable cleaning fluids—Don't use frayed electric cords—Keep matches away from young children—Clean out junk from the attic and basement—Make sure your electric wiring is not overloaded—Don't use ordinary extension cords on heaters or irons—Be careful with lighted cigarettes—Make sure you know how to operate your oil stove—Watch out for sparking chimneys! Most of all,

DON'T GIVE FIRE A PLACE TO START!

KIDS! JOIN SPARKY'S FIRE DEPARTMENT NOW!

You can become an official member of Sparky's great fire department and join thousands of other children all over the country who are learning how to prevent fires in their homes. Send 25¢ to my fire department in Boston and I will send you a handsome Inspector's badge, a colorful membership card and an official Inspector's manual which will help you prevent fires in your home. My fire department is a non-profit project of the National Fire Protection Association.

SPARKY'S FIRE DEPARTMENT
BOSTON 1, MASS.

NFPA

Fire Problems Occasioned by Aircraft

by Warren Y. Kimball

Part I

EVERY fire department must be prepared to handle fire problems occasioned by accidents to aircraft. Much injury has been done to the cause of crash fire control by the implication that, without massive and costly specialized equipment carrying special extinguishing agents, there is little hope of performing a successful fire fighting and rescue operation.

We do not intend to belittle the magnitude of the problems of airplane fires at major airports where more than one-third of all aircraft crash fires as well as many other fires involving aircraft occur. Airport fire protection calls for highly specialized crews, equipment, and operational procedures which must be closely coordinated with flight operations.

However, we do contend, most emphatically, that when a plane comes down in the jurisdiction or area served by any regularly constituted fire department the aircraft fire problem is a general fire service problem.

The idea that fire departments are incapable of coping with burning or damaged aircraft is just as false as a contention that they cannot cope with tank truck fires, with fires and accidents involving railroads, or large vessels such as tankers, passenger ships, and freighters. The proud tradition of the fire fighting service is that we accept and cope with emergency and disaster situations involving other people's mistakes and failures, of whatever magnitude, and in the words of Holy Scripture "snatch them as brands from the burning."

There are groups who, for various reasons, want to relegate the experienced and long-organized fire-fighting service to the role of protecting merely small stores and cottages. Beyond that "trivia," the specialist would move in and stake a private claim for his personal brand of private fire protection.

Often thoughtless or inexperienced persons forget that only the organized fire service has the experience, the organization, and the vast amount of costly equipment of proper type to cope with modern complex fire problems on a "round-the-clock" basis. The fire service has the devotion to duty — the pride — and the "guts" to do the job with a zeal and spirit of self-sacrifice which no other group can excel.

Fire fighters of the Boston, Massachusetts, Fire Department practice aircraft fire fighting with low pressure carbon dioxide (Cardox) equipment which is carried in 9 of the department's hose trucks.

Now we do not minimize the problem — the spectacular, unexpected terror that may occur when an aircraft, moving at terrific speed, plows into a congested community, explodes and starts a raging fire on impact. We do maintain that the only agency equipped to respond instantly, confine the damage and render aid is the fire service. Fire companies respond with split-second precision, regardless of the time of day, or night, or the type of weather. Fire fighters are ready to roll instantly as an organized, disciplined force, having battle tested operational techniques and command organization.

Accordingly, let us analyze, particularly, the off-field or "off airport" airplane crash as a normal fire fighting and life-saving operation. Today we handle fires in congested business districts, industrial areas, congested residential areas, suburban and rural communities and in forested areas. Aircraft crashes and fires occur in all of these locations. Our fire department response is normally geared to the severity of the hazard in the area served, with pre-scheduled additional help available on additional alarms and from mutual aid.

Our fire service is not unacquainted with the sight, sound, smell and terror of big flammable liquids fires. However large, such fires are simply "Class B" (second class) fires which every fighter understands and knows how to handle from his probationary fireman days.

True, there may be great life hazard in airplane crash fires, but so is there hazard to life in large hospitals, schools, industries, and large buildings of every sort, where explosion and fire may occur. We are concerned, not just with the occupants of an ill-fated aircraft, but also with hundreds and thousands of citizens who must be protected from fire at all times.

Our ability to handle fires resulting from aircraft impact is a measure of our ability to protect the district we serve. The New York City Fire Department amply demonstrated this at the Empire State Building crash and fire (see FIREMEN for September, 1945). Problems of fire remote from hydrants are not new. Certainly, a service which has protected this combustible continent

for generations is not going to run, recoil, and abdicate when its old enemy, fire, presents a new face. After all, the plane crash type of problem is only a small version of what might be expected from an atomic bomb explosion and I have heard no fire chief join the counsel of the fearful who would run and abandon all that American labor and ingenuity has built.

As a matter of fact, the aircraft fire problem is just another special fire hazard problem — as is nuclear energy, which also must yield to proven techniques of fire control.

In another issue of FIREMEN we will discuss how proven operational techniques, including training and preplanning, may be applied by fire departments who must handle an airplane crash fire problem.

Planes may be large or small, but the fire problem yields to the old giant-killer techniques including: inspection and preplanning; adequate response; size up; rescue; containment of fire; protection of exposures; control and extinguishment; salvage and mop-up.

As pointed out, we are concerned chiefly with the problem of aircraft-caused fires and accidents beyond airport limits, although many fire departments do provide specialized "on-field" airport fire protection and other fire departments provide "back-up" fire protection at airports in or adjacent to their territories.

We have already mentioned that the severity of the off-airport or municipal airplane-crash fire is, in a large measure, influenced by the type and density of structures on the ground and the life hazard in the community adjacent to the point of impact. The important job of saving all possible life and property from the involved aircraft is ever in the thoughts of the fire fighter. Often the plane receives a disproportionate degree of attention, particularly where instruction and training in crash fire fighting and rescue techniques is given by specialists in airport crash fire fighting who have no direct responsibility to the endangered municipality and who normally have been so trained that they are preoccupied with the rescue of aircraft occupants.

There are several basic mistakes made in training fire departments for crash fire fighting. These include: (1) "Over specialization" which tends to confuse the municipal fire fighter with detailed instructions regarding aircraft design that he cannot hope to remember; (2) too much emphasis on the need for complicated crash fire equipment engendering a feeling of futility where such equipment is not available; (3) overstressing the seriousness of the flammable liquid aspect of the aircraft fire problem; and (4) oversimplification of the rescue problems by illustrating the removal of one padded dummy from a simulated crashed aircraft which is assumed to land right-side up and conveniently accessible. Many training exercises tend to falsify the actual conditions likely to be encountered by arranging a relatively small fuel spill about a "mock-up" fuselage which contains a dummy not even held in by a safety belt.

Now, we contend that, to well-trained and professionally minded fire fighters, the airplane accident or fire is just another emergency for which there must be adequate planning and response. Initial action must be taken as dictated by the circumstances, but the idea that operations must be geared to a 90-second "rescue period" (as is often quoted as essential)* is grossly unrealistic under most conditions which will be encountered by municipal or public fire departments. Experience has shown that even where a large airliner has crashed in a remote rural area protected by volunteer fire departments, many lives and much property have been saved in a successful battle that may last for hours under most adverse circumstances. (See Air France crash, FIREMEN for October, 1954.) Thus, whether the operation be "big city" or rural, the fire officer will encounter the same sort of jobs of organization and supply that he always meets.

It is certainly highly desirable that the fire fighter know as much about airplanes that may be involved in fire in his community as he knows about other types of structures involving values of more than one million dollars and which present a potential life hazard.

It is not necessary for fire fighters to be aircraft identification experts (unless they are serving as "spotters" under the CD program) or to know details of design. They should know the principal features of concern from the rescue and fire control viewpoints, *i.e.*, the principal points of exit for the passengers and crew, forcible entry locations, fuel and oil tank locations, battery and combustion heater locations. Learn these common denominators on all aircraft and add, for military aircraft, the location of canopy and ejection seat controls, armament rocket and bomb locations and you have most of what you need. These matters will be treated in subsequent installments.

In practice run a large airport crash truck uses fog-foam to blanket simulated jet plane crash fire. Such specialized equipment may not be available for crashes which occur remotely from an airport.

*The "90-second" rescue time is an estimate of the survival period available for occupants to escape from a burning aircraft prior to the development of fatal toxic fire gases and unbearable heat. But this time element rarely applies where impacts occur which break up the fuselage or widely scatter the fuel.

Auxiliary Water Supplies

BY HORATIO BOND, Chief Engineer
National Fire Protection Association

A WATER utility, public or private, may usually be counted on to have procedures for dealing with various interruptions. Water supplies have been interrupted by earthquakes, storms, floods, landslides and various other catastrophies. Pumping stations can be destroyed by fire. The fire chief, as well as the water official, should know the strong points and weaknesses of the water system which feeds public hydrants. The fire chief should have some idea of these factors because they could affect decisions he would have to make regarding how far to go in the development of other water sources for fire department pumper supply.

The fire chief should understand where the city's water comes from, where and how it is processed, and the distribution system by which the water is brought to the hydrants. He will want the water utility to have good plans of all details of the system and up-to-date records, so that his department may have access to information on features which concern the fire department in its use of the system for fire fighting.

Interruptions of the Public Water System

The fire chief should also be aware of the situations which could interrupt the public water service and the seriousness of interruptions which would take place if certain things should happen. For example, he should study carefully the effect of a broken dam, an intake or well field out of service, a destroyed pumping station or purification plant, a broken conduit, failure of electric power, or other major disruption of the system. He should also consider the effect of possible damage to one or more pumps, filter units, power lines or reservoirs at any principal station or plant of the system.

Emergency Operation of Valves

In dealing with most interruptions to the public water supply, the most important factor is the water utilities' ability to promptly operate valves in the system. This enables damaged areas in the distribution system, or damaged facilities or equipment, to be cut off to prevent needless loss of water and to maintain service in areas unaffected by one item or damage. A well-run water utility would have records of where all valves are located and would have procedures for inspecting and operating each valve not less than once a year. Too many water utilities do not have such records, nor do the valves get frequent enough inspection and test operation.

Few water utilities have enough regular employees to maintain an emergency crew with enough men and equipment to operate a large number of valves. The operation of valves is a slow process at best, which is why it is important to have records of just where the valves are, particularly if they are in pavement. If each fire department company is informed of the location of valves in the distribution system their accessibility can be noted at the time the fire company personnel is making hydrant inspections. The water utility can then be advised when any such valves need attention for any reason, such as obstructions placed during construction operations or other work.

Power equipment is needed for the operation of large valves in any reasonable time and with any reasonable number of men. This equipment is not always available.

The fire department should make fire fighting plans based on the assumption that interruptions of the public water system may be of several hours duration in case of even one break in a distribution main, and several days in the case of main feeders. It is to the fire chief's interest to ask the city manager or principal municipal executive to arrange for the water utility to have a well ordered system for dealing with its valves in cases where the utility does not regularly inspect and test-operate the valves or where its valve records are not complete.

Alternate Water Sources

Where water systems are divided into pressure zones, water can often be transferred from one zone to another by operating valves or by using fire department pumpers to pump from the hydrants in one zone to hydrants in the other. The same sort of thing can be done between the water systems of adjoining communities or between a private system and the public system. Private systems at institutions, industrial plants and elsewhere can sometimes provide substantial amounts of water to tide over an emergency. The systems can be connected, but valves kept closed normally. By written agreement, the terms can be stipulated under which one system will supply the other in emergency.

In cities where ground-water conditions permit, it is possible to maintain a certain number of wells which can, in emergency, pump directly into the distribution system.

Additional water storage should be considered in any plan for improving the reliability of a distribution system. These would include elevated tanks and high-ground reservoirs and also ground-level tanks with pumps to discharge into the system. The latter is a reliable arrangement if more than one source of power is provided for the pumps.

Auxiliary Water Supplies

Auxiliary water supplies are those which are the responsibility of the fire department, rather than of a water department. The water systems of many North American cities are so good that a great many fire departments tend to ignore supplies other than the public hydrants. This is a mistake, as there are occasional situations where auxiliary water facilities could be readily made available for emergency use. In all departments, these auxiliary supplies should have attention, and in the larger departments a water officer

and a staff of men should be assigned to the development and maintenance of auxiliary water facilities.

Tank Trucks

All fire departments carry tanks of water on some apparatus for first-aid streams. Many fire departments also have one or more tank vehicles the sole purpose of which is to carry water for fire fighting in locations beyond the limits of the system of street mains. These tank vehicles are of great importance to fire department operations in areas having only limited rainfall, where streams or other natural water sources are not abundant, and where water for fire fighting is needed for suburban, farm or forest territory.

How many of these vehicles a fire department should have is determined by local conditions. For an occasional emergency where tank vehicles may be needed, the tank trucks of oil companies can often be borrowed. For efficiency, water tank trucks need to be designed and provided with connections for the specific purpose and they need drivers familiar with the fire department operations.

There is a point to consider in the use of the tank trucks of oil and other companies having such tanks. In a widespread emergency the need of trucks for carrying water to fight fires will be competing with other needs for such vehicles. Trucks are likely to be needed for carrying drinking water, for example, for flushing streets or other emergency purposes. In deciding on its needs for such vehicles the fire department cannot always depend on borrowing them.

Ground Tanks and Cisterns

If no hydrants on a public water system are available, one way to get the amount of water required for fire fighting would be to store it in a tank at or about the same location as the hydrant. The fire department pumper would get water from a connection on the tank or by dropping a suction hose into the tank.

This is in fact, a good method of providing water for fire protection. With such local supplies the water is right where it is wanted and is not dependent on continuing flow from a piped system. In an area where the required fire flow is 1,000 gallons per minute for four hours, such storage could be provided in a covered steel tank about 37 feet in diameter and 32 feet high.

There are no insurmountable difficulties in the maintenance of such tanks. They can be filled from domestic water sources too small for fire fighting and the water would not have to be changed so frequently as to present serious difficulties. In most cities they would not have to be heated if a small flow of water through the tank could be maintained. In very cold climates a tank-heating system would have to be provided. All of the arrangements for such tanks are well understood as they are widely used in industrial plants where the local storage of water for fire protection has been found practical. The reason such tanks are not used generally throughout cities is that the public water system provides, in normal conditions, a more convenient method of getting the water needed for fire fighting. However, as an emergency arrangement, the possibility of utilizing such tanks should be understood.

Open tanks and open reservoirs would present some special problems if used in place of hydrant supplies. They would have to be more frequently cleaned than would closed tanks. The water would need treatments of sorts: for example, to prevent the water being a breeding place for mosquitoes. The reservoirs would have to be walled or fenced to keep children from falling into them. Even if fenced they would present a problem because people throw rubbish of all sorts into them. Open reservoirs appear to be practical in farm areas, or where they are not too readily accessible to passers-by, but such reservoirs usually have to be covered elsewhere.

Before the present public water systems were developed, some cities provided underground reservoirs or cisterns for fire protection. These presented no particular maintenance problem, being located under streets. When water was needed for fire fighting, a pumper suction hose was simply dropped through a manhole. It was necessary in some places to keep snow and ice off the manholes, a task assumed by the fire department. Some of these cisterns can be found still in use. Notable are those of San Francisco. Even though the city has a regular water system and a separate system of high pressure mains, it has been considered prudent to keep in service a considerable number of cisterns, of 50,000 to 100,000 gallons capacity, which were provided under the streets in the central section of the city.

Streams and Ponds

Streams and ponds are important auxiliary water sources. The fact that the water from these sources is in sight does not assure that it can be used for fire fighting. It is often necessary to provide suitable approaches so that fire apparatus can get near enough to the water without becoming mired. A cleared space and some fill in many cases will provide a practically unlimited water supply. These sources must be studied to determine that the water is available in all seasons, and to select the best when there are a number of possible spots for an approach. The locations should be recorded and mapped and given periodic attention by a fire company in much the same manner that hydrants are kept in operating condition.

At such locations it is usually necessary to provide a basin or cistern into which water can flow and into which the pumper suction strainer can be placed. Such containers can be arranged with a screen or weir so that large objects will not get into the basin and interfere with the suction strainer. In some places a permanent suction pipe and strainer can be installed. This is often a practical way to get around difficulties with ice. Large tapered wood plugs are often floated where ice may form in such basins. When access to the water is needed, the plugs are simply driven down through the ice. Another arrangement is a cistern with a frost-proof cover.

In some parts of the country, streams do not flow continuously. By providing a covered cistern of generous capacity, it may be filled when water flows. Thus the water may be stored for a longer period than it would keep in an open reservoir.

Water from streams and ponds is of more importance in areas without public water systems than

in a city. There are small groups of farm buildings and small communities where even a brook, if dammed, with a proper pumper approach and a suction basin, can provide a lot of fire protection at little cost.

Tidewater

Where there is little fluctuation in the level of a natural water source, a simple pier or platform may provide all that is needed to make the water available for pumper suction. If the pumper can be driven onto a pier, it can go to work by dropping its suction line over the side. Where there are substantial fluctuations in water level, for example due to tides, special arrangements are needed. At locations where the water is always deep enough for drafting, a hinged ramp leading down to a large float is feasible. But a common tidewater condition is a sloping beach down which the water recedes too far to be accessible at all times. Reservoirs which can be filled at the high tides afford one solution to this problem.

Where a bridge passes over tidewater, water can be obtained by a permanent installation of a pump of the deep-well type with a discharge pipe to a point convenient for fire department pumper use. The most practical method of using tidewater supplies is to provide pumps on boats, supplementary to any fireboats the fire department may keep regularly in service.

Other Water Sources

Study of each city may indicate other sources of water which may be developed as pumper supplies. For example, storm sewers may be arranged so that water may be held in parts of them or they may be flooded at high tide in coastal cities. Where this can be done large amounts of water may be available through sewer manholes.

Small ponds in parks and swimming pools are not particularly good sources of emergency water because of difficulties in the competing use of these for their regular purposes and for fire fighting. In general, auxiliary water facilities should not be subject to other use.

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You can save them with
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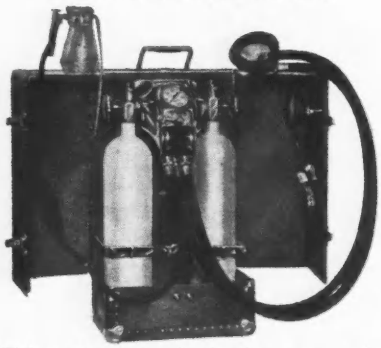

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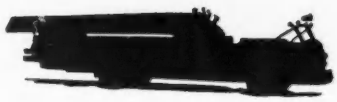


For Burn-Up Time!

NOW'S the time when too many property owners rely on fire to clear land of dried grass and brush. That's why fire departments will be having their busiest days in the next few months when such fires get out of control. And many fire chiefs will find the new NFPA folder "Handling Fires in the Open" a useful item to distribute with burning permits. It has some good suggestions for owners of suburban property and summer camps, as well as for any other person who wants to risk an outdoor fire against a spring wind. Copies can be obtained from the NFPA Executive Office for $1.50 per hundred; $12.50 per thousand.

Also of use to the owner of camp property is NFPA Standard No. 224 — "Fire Prevention for Homes and Camps in Forested Areas." This 4¾ by 7¼-in., 24-page pamphlet contains recommendations of the NFPA Forest Committee for such properties. It describes structural standards, fire protection and fire prevention measures, fire fighting equipment and methods of education for preventing fire in forested areas. There is a section for outdoor campers and a self-inspection form with which camp owners can make an effective study of their properties. Copies of No. 224 may be obtained from NFPA for only 35 cents each, with 25 percent discount allowed for single-lot purchases of 25 or more.

Sparky in Reader's Digest

WATCH for a colorful advertisement titled "What's Wrong With This Picture?" which is scheduled to appear in the June issue of *Reader's Digest*. This public service by *Reader's Digest* is another commendable gesture by this magazine, which has a circulation of over 10,000,000. NFPA members will recall that the *Reader's Digest* in 1952 compiled a Public Service Guide in cooperation with the NFPA. This Guide, which contained reprints from the *Reader's Digest* as well as selections from NFPA literature, has been a popular and important contribution to public fire safety.

The new advertisement, in addition to featuring Sparky, mentions the National Fire Protection Association. Arrangements for its insertion in the *Reader's Digest* were made by the Advertising Council.

Elementary Radiation Safety

MORE and more, industrial plants and other properties are developing into places where the hazard of nuclear radiation has to be recognized. While the amounts of the dangerous radiation as a rule are small, the operators of such properties have the problem of explaining the hazards to employees and also the problem of securing employee cooperation in whatever program is set up to control exposure to these hazards.

An elementary discussion of radiation safety directed to employees has been used by the U. S. Atomic Energy Commission in connection with its plants and those of its contractors. This material has been published in a Radiation Safety Primer, 5¼ by 8 inches, 64 pages. This is primarily a picture book, and may be obtained for 25 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Fire Fighting for Householders

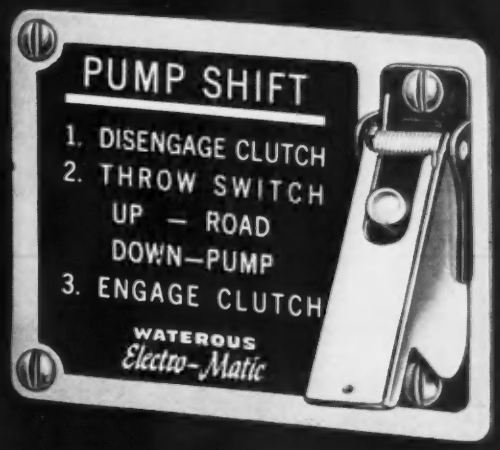
THE U. S. Federal Civil Defense Administration has issued a revised, March 1956, edition of its pamphlet with the above title. The revision, like its predecessor, stresses the importance of people in homes learning how to deal with small fires. The pamphlet also contains helpful information on fire prevention in the home and suggestions to avoid injury and loss of life in fires. The 32-page pamphlet is 5⅞ by 4⅝ inches in size. Copies may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., for a single copy price of 10 cents, or $5.00 per 100.

WANTED!

Newly formed Volunteer Fire Dept. needs a good used pumper-water wagon. Prefer four wheel drive, 500-gallon pump, 300-500-gallon tank. Will consider single axle drive if equipped with dual wheels.

POMPANO BEACH HIGHLANDS VOLUNTEER FIRE ASSOCIATION
William F. Reed, Secretary
1458 N.W. 30th Street
Pompano Beach, Florida

Look what's happened to Fire Pumps



Power shifting . . . a new exclusive *Electro-Matic feature**

Flip the switch and the *Electro-Matic* is engaged!

No groping with cab or panel levers . . . no nursing gears into mesh . . . shifting is performed *automatically* and smoothly by a fast-acting shifter that's proved dependable in thousands of modern commercial trucks.

Power shifting is but one example of the revolutionary new features by which this new WATEROUS Pump has introduced a new era in fire fighting equipment . . . the *Electro-Matic Era.*

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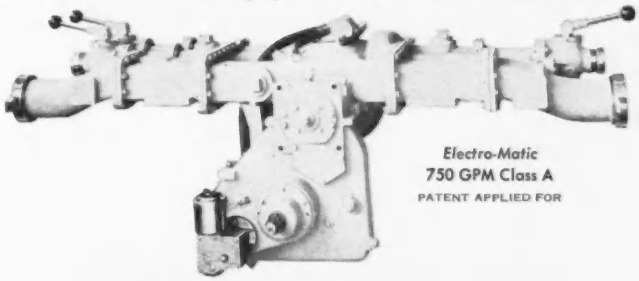
And to all this add new, scientifically designed impellers and waterways for greatly improved performance with less space and weight . . . 2-piece horizontally split pump housing for simplicity and accessibility . . . and oil-lubricated impeller shaft bearings which are protected from water by their location outside the pump for long life and dependability.

Electro-Matic Fire Pumps with Class A capacities of 500, 600, 750 and 1000 gpm are standard equipment on leading makes of fire apparatus.

For further information, write Waterous Company, 42 Fillmore Avenue, St. Paul, Minnesota.



WATEROUS
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*Registration applied for.

"Spelling Out" Fireground Procedure

(Part II of two parts)

IN THE preceding issue of FIREMEN magazine the first part of this article showed how one fire department "spells out" the positioning of fire companies and the responsibilities of deputy and district chiefs on the fireground. These pages show how the department describes responsibilities of the various assistant chiefs who operate under the direct command of the Chief of Department.

These general orders are not suggested as a model but merely report how one fire department exercises its chain of command. It is suggested, however, that other fire departments put their own operational instructions into easy-to-understand writing. Informative general orders provide many fire fighters with the "reasons why" for their numerous actions on the fireground. Such understanding is often the key to successful, unified group action in fire combat.

14. Assistant Fire Chief in Charge of Firefighting Force (Hdqtrs.)

On arrival of the Assistant Fire Chief in Charge of Firefighting (Hdqtrs.), in the absence of the Chief of Department, he shall be in charge of fireground activities, and he shall direct all operations in connection therewith. Upon arrival of the Chief of Department, the Assistant Fire Chief in Charge of Firefighting shall report existing conditions and then shall take charge of the area at the rear of the fire, and, after consulting with the Deputy Fire Chief regarding the existing conditions and the action taken by him, he shall be assisted by the Deputy Fire Chief in directing the attack on the fire in that area. He shall keep the Chief of Department constantly informed of the conditions at the rear of the fire area, and he shall coordinate the attack with the overall plan of the Chief of Department. He shall notify the Chief of Department of any additional help or equipment that may be needed in attacking the fire in the rear.

15. Assistant Fire Chief — Fire Prevention

The Assistant Fire Chief in Charge of Fire Prevention shall be in charge of the attack on the right side of the fire building or fire area and shall be in charge of all operations in connection therewith. He shall keep the officer in command at the fire constantly informed of the conditions in that area and of any additional help or equipment required for attack. He shall coordinate the attack with the overall plan of the officer in command at the fire.

16. Assistant Fire Chief — In Charge of Training

The Assistant Fire Chief in Charge of Training shall be in charge of the attack on the left side of the fire building, or fire area, and shall be in charge of all operations in connection therewith. He shall keep the officer in command at the fire constantly informed of the conditions in that area, and of any additional help or equipment required for the attack. He shall coordinate the attack with the overall plan of the officer in command.

17. Fireground Activities of Assistant Fire Chief (Divisions)

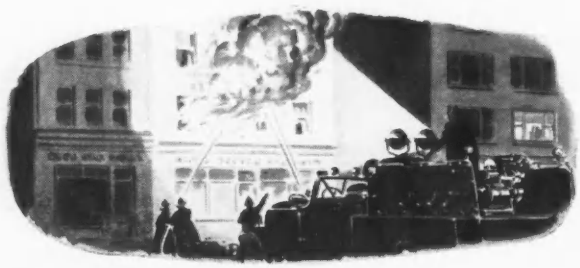
The Assistant Fire Chief (Division) is specifically charged with the following duties at multiple alarm fires:

(1) He shall see that all pumping engines are properly connected to hydrants or other sources of water supply and are being operated within their proper motor speeds and discharge capabilities.

(2) He shall make certain that all heavy stream appliances are supplied and operated for maximum effectiveness and that

KOHLER Electric Plants

...independent electricity for municipal and volunteer fire departments



MODEL 1.5M25, *1500 watts, 115 volt AC. Manual starting. 2500 watt AC portable models also available.*

Portable 1500 watt Kohler model provides reliable power for floodlighting night fires—and for smoke eradication, power tools, resuscitators, pumpers, rescue equipment. Compact design, has 4 receptacles, pilot light, double carrying handle. Rubber-tired hand cart available. Other sizes, from 500 watts to 35 KW, include stand-by models for sirens, alarm signals, communications, when central station power is cut off.

Civil defense units use Kohler automatic stand-by electric plants to safeguard lighting and communications at headquarters, shelters, first aid stations, hospitals; portable models for rescue trucks. Write for folder N-8.

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whenever possible the maximum number of lines are stretched to such appliance to reduce friction loss and increase the effectiveness of the streams. On arrival at a multiple alarm fire, he shall immediately check all heavy stream appliances in service to see that they are properly supplied and that they are equipped with tips of the proper design and size for the available water supply.

(3) He shall maintain liaison with the Water Department by way of department radio through the Fire Alarm Office and keep himself informed regarding the existing water supply on the fireground, and he shall notify the officer in command when additional pressure is needed on the water supply system.

(4) He shall inform the chief in command at the fire when additional pressure is required on the high pressure system.

(5) When necessary for pumpers to draft water at waterfront fires, he shall make certain that pumpers are lifting water and supplying it to lines under proper pressure and volume.

(6) He shall make certain that the effectiveness of existing streams is not impaired by the overloading of pumping engines or water mains. However, this shall not prevent the running of additional lines to reduce friction loss in layouts to streams already in service.

(7) He shall be responsible for the correct placing of heavy stream appliances and shall have such appliances placed in position where they may be needed in anticipation of extension of the fire.

(8) At every multiple alarm fire to which he responds, he shall make certain that one or more ladder pipes are attached and connected up ready for service if needed to attack the fire or to cover exposures.

(9) He shall see that all large capacity fog nozzles are set to give maximum fog coverage at the required range and pressure.

(10) He shall direct the placing and operation of wet water and fog-making equipment when the same are to be used at a fire.

(11). He shall keep the roadway around the fire area as clear as possible for the movement of apparatus. He shall arrange to open the streets for the movement of public traffic as soon as possible.

(12) It shall be the responsibility of the Assistant Fire Chief (Division) to note any conditions on the fireground which indicate the need for further specific training by any company or unit and to arrange for such training.

18. Chief in Charge — Maintenance Division

The chief in charge of the Maintenance Division and the officers of the Motor Squad are hereby directed to report to the Assistant Fire Chief (Division) and to assist him in carrying out the responsibilities assigned to him. The chief in charge of the Maintenance Division shall be held responsible for carrying out the activities of the Assistant Fire Chief (Division) in his absence.

19. Rule 187 (m)

Rule 187 (m) shall be amended to read "The first and second due engine companies arriving at a fire on the first alarm shall not connect to the same hydrant."

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HI-GLO
V.H. BLACKINTON & CO., INC.
COMM OF MASSACHUSETTS
ATTLEBORO FALLS
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THIS BADGE WILL MAKE YOU THINK TWICE BEFORE ORDERING ORDINARY GOLD BADGES
Why . . . Because this new HI-GLO Badge is different. It is made from an entirely new material—a rich looking golden metal that is solid gold color throughout. That's why you can polish a HI-GLO badge for a lifetime. Every HI-GLO badge will have deluxe enamel lettering and a ruby colored stone set in the eye of the eagle. (Stone optional at extra charge.) You can see, the new HI-GLO badges will be something special, a distinctive badge for those who want the very finest gold color badge.
Your Blackinton equipment supplier has samples of the new HI-GLO badge. Ask him for more information.
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We can supply everything the fireman needs for his personal equipment. Write for Catalog 350.

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SINCE 1836

Attendance Records Broken at 28th FDIC

NEARLY 2,000 fire department and fire insurance officials attending the Fire Department Instructors' Conference in Memphis, Tennessee, (February 21-24) witnessed demonstrations of new fire fighting equipment. Shown above is an electrically operated ladder pipe with both vertical controls and stream pattern controls manipulated from the ground level.

The 1956 Conference attracted the largest attendance in the history of this notable fire service meeting, with representatives present from 42 states and Canada. Chairman of the Conference was Richard E. Vernor, Manager, Fire Prevention Department, Western Actuarial Bureau, who is also Chairman of the NFPA Board of Directors. Co-chairman and local host to the Conference was Fire Chief John C. Klinck of the Memphis Fire Department.

SALES TERRITORIES OPEN

Several choice territories are still available to qualified representatives to handle sales of Fire Trucks, Tankers, Emergency Cars, etc., manufactured by:

Sharpsville Steel Fabricators, Inc.
Sharpsville, Penna.

Correction on Port Alfred

The February 1955 issue of FIREMEN magazine which listed the winners of the Fire Prevention Week Contest conducted by NFPA erroneously placed the town of Port Alfred, Quebec, Canada, in the "F" Class; that is, for communities having populations of less than 2,500 inhabitants.

This, of course, did not give full credit to that community since for the past few years the Town of Port Alfred has been in Class "D" and has a population of more than 8,000 inhabitants.

Aircraft Fire Fighting

EVERY fire fighter interested in how to handle aircraft crash fires will find much valuable information in the newly published NFPA Aviation Bulletin No. 142. It describes some 69 large loss aircraft fire accidents which occurred during 1955 in the United States, Canada, Alaska, and off shore. The 8½- by 11-inch, 32-page bulletin has numerous dramatic pictures of fire-involved planes. In addition to describing accidents involving 55 military aircraft, 11 commercial or private aircraft, and 3 manufacturers' test aircraft, the booklet also reports fire fighting procedures used by airport personnel and municipal fire departments who responded to these incidents. Attention is also given to rescue work and to special airport apparatus which responded to some of these crashes.

As additional information for fire department training sessions, the bulletin also lists a selected group of NFPA Aviation Bulletins which have been published during 1951 to 1955. Copies of the new Bulletin No. 142 may be obtained for $2.00 each by writing to the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

FOR SALE

400 G.P.M. Pumper
with 400 gal. Booster Tank
Excellent Condition

BETHEL HOSE CO.
Boothwyn, Pa.

Chief
F. R. DIMOND
OF HUTCHINSON, KANSAS

Says: We like
INDIAN
FIRE PUMPS

Because they are carried on the back leaving the men's hands free for climbing ladders, etc. We use them for all Class A fires. They are easy to get off the truck and on to the back of the men using them."

INDIAN FIRE PUMPS are approved by UNDERWRITERS' LABORATORIES

No. 90 Sliding Pump Type
(illustrated)

For all Class A fires and many Class B fires. Fire Chiefs say **INDIANS** are "worth their weight in gold."

●

Also available as No. 80 with lever type pump and handle.

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GUESTS AT FDIC

THE photo at left was taken during the recent Fire Department Instructors' Conference at Memphis, Tennessee. Shown left to right are: Harry H. Wolff, Field Officer, Fire Prevention Department, Western Actuarial Bureau, Chicago, Illinois; Deputy Chief Arthur Spottswood, Minneapolis Fire Department; Chief Donald S. Charles of Charlotte, North Carolina, Second Vice President of the International Association of Fire Chiefs; Chief Wayne Swanson of Rockford, Illinois, First Vice President of IAFC; Richard E. Vernor, Manager, Fire Prevention Department, Western Actuarial Bureau, and Chairman, NFPA Board of Directors, who also serves as Chairman of FDIC; Chief William Fitzgerald of Seattle, Washington, President, IAFC; John P. Redmond, President, International Association of Fire Fighters; George I. Richardson, Secretary-Treasurer, IAFF, and member of NFPA Board of Directors; Albert Peterson, Fire Marshal, Minneapolis, Minnesota; and Reynold C. Malmquist, Chief of the Minneapolis, Minnesota, Fire Department.

Better Hose Care-with CIRCUL-AIR
HOSE CONDITIONING EQUIPMENT
WASHERS • DRYERS • TURN-TABLES • STORAGE RACKS

NEW Roto-Jet HOSE WASHER
AUTOMATICALLY
WASHES — RINSES — DRAINS HOSE

ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Hose is self-propelled. Simple one man operation. With or without detergents ashes, dirt, mud and sludge are automatically scrubbed out and flushed away. Saves time. Lengthens hose life.

FIRE HOSE DRYER

The patented, electrically operated Circul-Air hose dryer circulates prewarmed fresh air through loosely coiled hose at the rate of 5 to 6 air changes per minute. Saves floor space, hard work and lengthens hose life. No other drying method is so fast — so economical — so easy to use. Circul-Air is the preferred drying method in over 3,000 leading Fire Departments.

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ACCEPTED — APPROVED — RECOMMENDED

Approved by Underwriters' Laboratories . . . and Canadian Standards Association. Recommended by all leading fire hose manufacturers.

PORTO-RAK HOSE STORAGE and LOADING UNIT

Saves valuable space. Holds 1800 ft. of 2½" hose — proportionately more of 1½" — in an 8 ft. space (when loading table is detached). Roll it right up to the truck for complete hose reload — out of the way when not in use. Equipped with locking fiber wheeled casters.

WRITE FOR NEW LITERATURE

If you are planning to build or remodel, send for our brochure "Fire Station Design."

THE CIRCUL-AIR CORPORATION
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More Fire School Dates

California: The Fire Service Instructors' Conference will be held in Fresno, May 21–25. The Fire & Arson Investigation Short Course will be held in University of California, Berkeley, June 11–15. For further information write to Thomas S. Ward, State Department of Education, 721 Capitol Ave., Sacramento, California.

Idaho: The Idaho State Fire School is scheduled to be held in Boise June 7–9. For information on the program write to Secretary-Treasurer Earl Robinson, Idaho State Fire School Association, 212 S. Sixteenth Street, Boise, Idaho.

Illinois: The Southern Wisconsin and Northern Illinois Firemen's Association will conduct their Twentieth Annual Fall School on September 9 at the Savannah Ordnance Depot, Savannah, Illinois. For further information write to the Program Secretary, Kenneth Holt, Cassville, Wisconsin.

Indiana: The Annual Industrial Fire Control Seminar will be held at Purdue University May 22–23. The Fifteenth Annual Fire Department Instructors' Conference will be held at the Indianapolis Fire Department Drill School June 13–14. The Twenty-third Annual Indiana State Fire School is scheduled to be held at Purdue University September 11–14. For further information write to Norbert Lehman, Fire Instructor, Purdue University Division of Adult Education, Lafayette, Indiana.

▲ Chief George E. Hink, pictured commanding fire-fighting operations, comments on Philadelphia's new Macks: "Even though these jobs have been in service only a short time, the companies that have the Macks are very pleased with their performance. I feel that they will do an excellent job."

▼ Six Mack B-85, 750 gpm triple combination pumpers built for the City of Philadelphia.

PHILADELPHIA puts MACKS into action!

Shown opening up its turret nozzle on a real "worker" is one of six highly versatile Mack 750 gpm pumpers recently put into service by the Philadelphia Fire Department. Reflecting Philadelphia's leadership in the use of advanced fire-fighting methods and equipment, these Macks have been designed to combat virtually any type and size of fire. Their specifications include the following:

500-gallon booster tank . . . 3-stage centrifugal pumps capable of delivering 800 lbs. of fog stream . . . large hose bodies with capacity for 800 ft. of 3½, 800 ft. of 2½ and 400 ft. of 1½ inch hose . . . detachable turret nozzles capable of delivering 1100 gpm . . . pumps mounted outside of hose bodies to facilitate servicing.

Your fire-fighting problems may vary, but there's a Mack apparatus to best meet every need. And back of every Mack stand the greatest research and manufacturing facilities, the most widespread parts and service network in the industry. Get full details from your nearest Mack Branch or Distributor.

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COMPLETE LINE OF PUMPERS — 500 TO 1250 GPM . . . SQUAD AND HOSE WAGONS . . . 65', 75' AND 85' AERIALS . . . COMBINATION LADDER TRUCKS

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Portable Blower

Ideal for firemen. Can be used to blow odors, smoke and gases out, or to blow fresh air in. Portable, gasoline engine driven model G. 2,000 CFM. 9 inch inlet, 11½ outlet. Flexible exhaust, pressure type. Government Surplus. NEW, in original crates. Shipping weight 145 lbs. Net weight 80 lbs.

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Check These Superior Features

Solid flat backs — coat and cap attachments, center emblems and numbers guaranteed for 10 years—plannished lettering—clearer, sharper frontal features—superior craftsmanship.

Check the new Nielsen-Rionda Sta-Brite Badges. Rich, golden color metal throughout. Polishes for a lifetime—like solid gold badges.

Write for free 32 page catalog illustrating badges available in the new STA-BRITE as well as all standard finishes.

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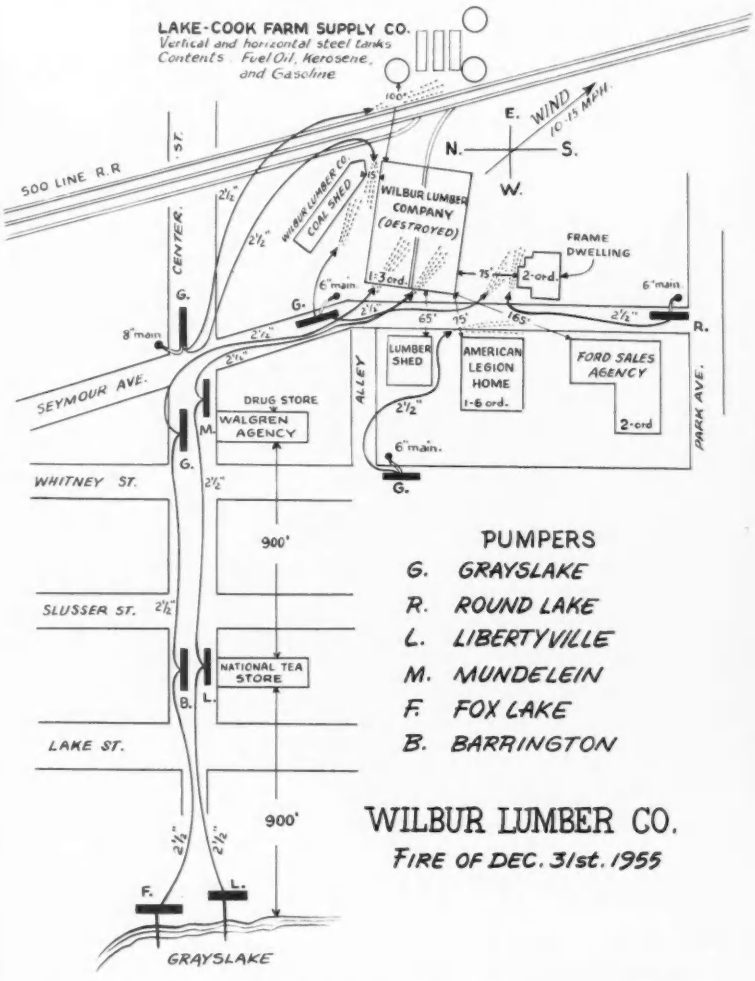
RURAL PRE-PLANNING PAYS OFF!

FOR the past four months FIREMEN magazine has featured a series of articles on the pre-fire planning program of the Memphis, Tennessee, Fire Department. That such fire department foresight is not confined to large municipalities is shown by the detailed sketch and fire report on these pages. They were submitted recently to the NFPA Fire Record Department by Secretary J. Deichman of the Grayslake, Illinois, Volunteer Fire Department.

Note that there are only four hydrants on 6- and 8-inch mains in the vicinity of the involved structure. Without pre-planning, these could have been overtaxed, with, perhaps, dangerous effects on exposures. The 2500-ft. relay operation undoubtedly was essential to the success of fireground operations.

We are always pleased to hear from our readers, particularly when they have detailed information to report on fire action. Commendations are due to this fire department in particular, not only for making the information available, but for establishing a pre-fire planning program for the major target hazards in the county, and for describing the results of mutual aid operations with a sketch and a simple, but effectively written report which describes the action.



Sketch of fire attack operations conducted as part of the mutual aid plan for the six fire departments which responded to this Grayslake, Illinois, lumber yard fire. Members of these fire departments have developed mutual aid drills and fire fighting tactics for other target locations which would be covered by the Lake County mutual aid plan.

Fire Report by Secretary J. Deichman, Grayslake, Illinois, Volunteer Fire Department

STARTING shortly after 9:00 p.m. on Saturday, December 31, 1955, fire of undetermined origin swept through the Wilbur Lumber Company at Grayslake, Illinois. The large frame structure and its contents were totally destroyed with an estimated loss of $200,000, but exposures were saved. That the fire was confined to the building in which it originated can be credited to the prompt summoning and response of assisting fire departments, and pre-planned and practiced mutual aid operations.

The Wilbur Lumber Company building was of wood-frame construction and was erected in 1900 after a fire (also occurring on a New Year's Eve) destroyed the original building in 1899. The structure was 216 feet long and 85 feet wide. The roof reached a height of 35 feet at the center ridge. At the time of the fire the building contained approximately 250,000 board feet of lumber and miscellaneous building material. A steel railroad box car on a siding inside the building was destroyed, together with a truck and tractor.

The fire apparently had been burning for considerable time before it broke out through the roof and was first noticed. Due to this delayed detection, the building was almost entirely involved upon the arrival of the Grayslake Volunteer Fire Department. Protection of the surrounding buildings which were exposed to the severe heat became of first importance.

An immediate call was radioed for outside help and these fire departments of the Lake County Mutual Aid Plan responded: Round Lake, Lake Villa, Mundelein, Libertyville, Fox Lake, and Barrington.

At the height of the fire seven 2½-inch hose streams were in operation and all exposed buildings were successfully protected.

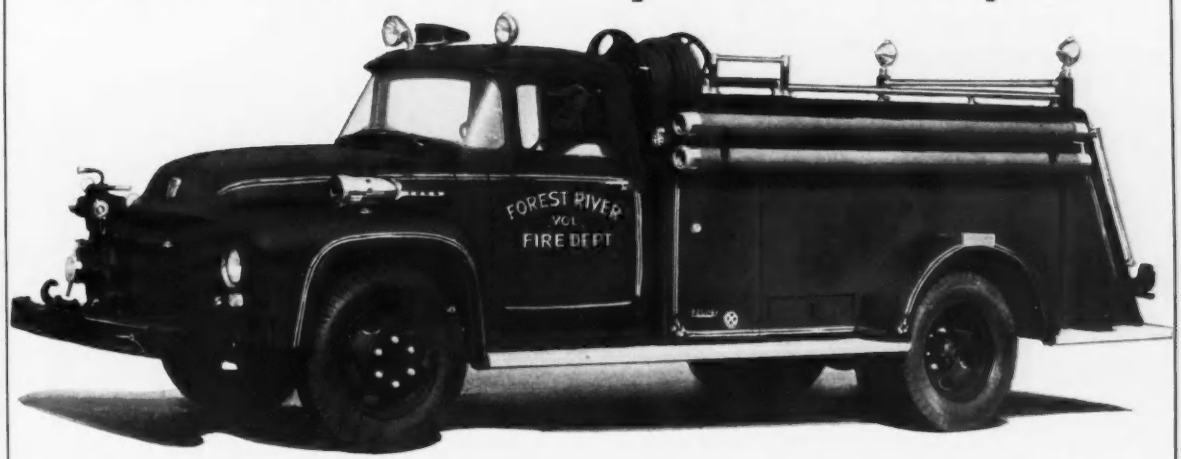
Since we considered this building a principal target hazard, it was selected for a mutual aid drill in October, 1954. All surrounding fire departments participated. This pre-planning and experience paid big dividends for, during this fire, it resulted in a rapid and smooth functioning of the mutual aid forces with an absence of confusion and delays.

In the mutual aid drill, it was determined that only six 2½-inch streams could be supplied adequately from the hydrants in the vicinity of the lumber yard. With this knowledge, fire fighters avoided the error of connecting too many pumpers to the hydrants during the fire, which would have reduced the effectiveness of all streams.

Pumping through relay lines from Grays Lake was also practiced during the mutual aid drill. Points at approximately 900 feet intervals from the lake to and through the business district were predetermined. Thus, at the fire, assisting fire departments knew in advance how to space their pumpers quickly to form two relay lines of three pumpers each, for a distance of 2,500 feet.

This fire gave us proof of the value of pre-planning and practicing mutual aid operations which permit coordination of operations of numerous rural fire departments in an organized fire defense operation.

500 Gallon Darley Ford Pumper



The pump is the Darley Champion Type KFF500 manufactured exclusively by W. S. Darley & Co. and used on Champion Fire Apparatus. A gear drive centrifugal with superior engineering features which guarantee brilliant performance throughout the entire range of pumping requirements for fire fighting.

The KFF Series Champions are double duty fire pumps which provide the complete range of volume performance for heavy streams plus the fire smashing efficiency of fog.

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The Original STRIPED SAFETY COAT

- ★ **New Yellow Rubber Stripes!**
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- ★ **Exclusive Safety Features!**

YOU deserve the BEST PROTECTION OBTAINABLE for your hazardous work of protecting life and property against fire. The Mackinaw Safety Coat with new yellow stripes is the answer! Highly visible stripes are rubberized as part of the material . . . not painted, glued or sewed on. There is no substitute for the superior quality, design, fabric texture and safety features you get by specifying MIDWESTERN!

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For complete information on our full line of safety clothing for firemen, see your Midwestern dealer. A letter to the factory will also bring you literature and materials for your inspection.

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Manufacturers of the Famous **MACKINAW Safety Coats**

WATER when and where you want it!

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Portable Canvas Water Tanks
THE ECONOMICAL AND EFFICIENT WAY TO CARRY AND STORE WATER.

ON THE JOB - ON THE SPOT
KEEPING AMERICA GREEN

EXCLUSIVE FEATURES

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Available in 150 & 300 gallon sizes

A WATER SUPPLY AT THE SCENE OF THE FIRE

Write TODAY for Full Information and Price List
HARODIKES INCORPORATED
NORTH DIGHTON, MASSACHUSETTS

New Members in NFPA

LOOK over this list of chiefs and fire departments who joined as NFPA Fire Department members during February and March. Perhaps you'll find a few from your own State or Province. If there aren't any names that you recognize, here's an action you can take to assist the National Fire Protection Association in its current drive for new members.

Clip out the coupon at upper left. Hand it to some fire chief or fire fighter whom you know and tell him what NFPA membership means to you. All he has to do is to fill out the blank and mail it to NFPA.

NFPA Welcomes: The following fire chiefs and fire departments as new members in the Association. Current NFPA Fire Department Membership totals 2,269 fire departments and 26,805 men.

Alberta: Fairview Fire Department, Fairview.

Arizona: Chief G. Van Hyfte, Parker Volunteer Fire Department, Parker; Chief Peter A. Mench, Wilson Volunteer Fire Company, Phoenix; Precott Fire Department, Prescott; Chief Frank Reeves, Tempe Fire Department, Tempe; South Side Volunteer Fire Department, Tucson.

British Columbia: Lumby Volunteer Fire Department, Lumby.

California: Chief Raymond V. H. Lyles, La Mesa Fire Department, La Mesa; Madera Fire Department, Madera; Williams Fire Department, Williams.

Colorado: Johnstown Volunteer Fire Department, Johnstown.

Connecticut: Chief George Stone, Southbury Volunteer Firemen's Association, Southbury.

Delaware: Wilmington Manor Volunteer Fire Company, Wilmington Manor.

Florida: DeLand Fire Department, DeLand; Sebastian Volunteer Fire Department, Sebastian.

Illinois: Crete Township Fire Protection, Crete.

Indiana: Eaton Fire Department, Eaton; Lafayette Fire Department, Lafayette; Valparaiso Fire Department, Valparaiso; Yorktown-Mt. Pleasant Township Fire Department, Yorktown.

Iowa: Nevada Fire Department, Nevada.

Kentucky: South Fort Mitchell Fire Department, South Fort Mitchell.

Maine: Southwest Harbor Fire Department, Southwest Harbor.

Massachusetts: Westport Fire Department, Central Village; New Braintree Fire Department, New Braintree.

Michigan: Chief Reed Vincent, Marshall Township Fire Department, Marshall; Chief Warren Marshall, Monroetown Volunteer Fire Department, Monroe; Superior Township Fire Department, Ypsilanti.

Minnesota: Walker Fire Department, Walker.

Montana: Baker Volunteer Fire Department, Baker; Chief Nick F. Simon, Big Butte Volunteer Fire Department, Butte; Malta Volunteer Fire Department, Malta.

New Hampshire: Gilmanton Hills Fire Department, Gilmanton Iron Works; Pembroke Fire Department, Suncook.

New Jersey: Clifton Fire Department, Clifton; Chief Lester H. Leffever, Lambertville Fire Department, Lambertville; Paramus Borough Fire Company No. 3, Paramus.

New York: Walton Engine & Hose Company, Chester; Eastport Chemical Engine Company No. 1, Inc., Eastport; O. L. Davis Fire Company, Endwell; Hempstead Fire Department, Hempstead; Poughkeepsie Fire Department, Poughkeepsie; Spencerport Volunteer Firemen's Association, Inc., Spencerport.

North Carolina: Griffith Volunteer Fire Department, Inc., Winston-Salem.

Nova Scotia: Bedford Fire Department, Bedford; Chief C. J. Slauenwhite, Lawrencetown Fire Department, Lawrencetown.

Ohio: Highland Heights Fire Department, Cleveland; Napoleon Volunteer Fire Department, Napoleon.

Ontario: Chief Arthur Gouriluk, Red Lake Volunteer Fire Department, Red Lake.

Pennsylvania: Eddystone Fire Company, Eddystone; Narberth Fire Company, Narberth; Lingohocken Volunteer Fire Department, Wycombe.

Saskatchewan: Whitewood Fire Brigade, Whitewood.

Tennessee: Jefferson City Volunteer Fire Department, Jefferson City; Oneida Fire Department, Oneida.

Texas: Chief Morris Keng, Sinton Volunteer Fire Department, Sinton.

Virginia: Fairlington Volunteer Fire Department, Arlington; Fredericksburg Volunteer Fire Company, Fredericksburg; Lake Jackson District Volunteer Fire Department, Inc., Manassas; Vienna Volunteer Fire Department, Inc., Vienna.

Wyoming: Douglas Fire Department, Douglas; Ranchester Fire Department, Ranchester; Thermopolis Volunteer Fire Department, Thermopolis.

APPARATUS for SALE

Engine No. 1. 1942 Diamond T. 6 cylinder Hercules engine, with Waterous Pump. 750 G.P.M. Hose body capable of carrying 1,250 feet of 2½" hose and 800 feet of 1½" hose.

Engine No. 2. 1942 Diamond T. 6 cylinder Hercules engine, with Hale pump, 750 G.P.M. Hose body capable of carrying 1,250 feet of 2½" hose and 800 feet of 1½" hose.

Studebaker Squad Truck. Purchased in 1931. This truck has a 500 G.P.M. front end pump, Type F-4. Capable of carrying 2½" or 1½" hose.

Chief Adrian P. Dowd
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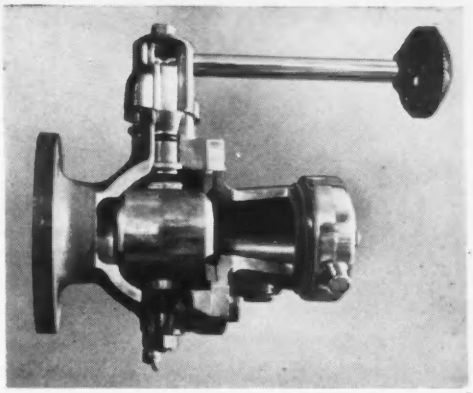
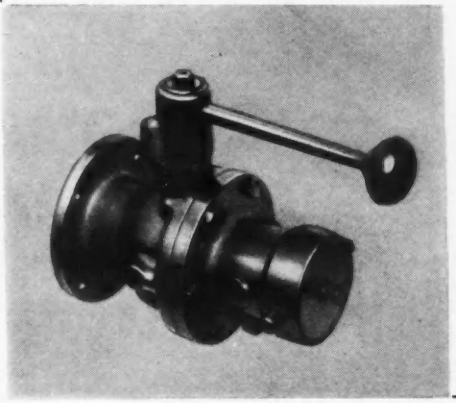
Nantasket Beach, Massachusetts
Tel. Hull 5-0540

HALE TYPE "BL"
Discharge Valve

This popular HALE ball-type BL Valve is not only furnished on new HALE Pumps, it is also available for easy installation on ALL Hale Fire Pumps now in service, regardless of age.





Above — View of BL Valve cut away to show internal construction. Valve is in open position with cap on.

Note: New revised Bulletin No. 293 now available covering complete details. Send for yours today!

Hale Fire Pumps are built in all standard capacities.

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CONSHOHOCKEN, PA.

FEDERAL BEACON RAY

WHAT'S A LIFE WORTH

You can't place a dollar and cents value on a human life. Certainly it's worth more than the price of an adequate warning signal. The first act of **any** department at the scene of a fire is to **save lives** rather than property. Large sums are spent for special ladders, nets, chutes, resuscitators and other **life saving** equipment. The use of this equipment for fire fighting is actually secondary. The difference between the price of a FEDERAL Beacon Ray and inferior warning lights can be the price of a human life. **Don't let a few dollars deprive it of any portion of the good it can do.**

$75.00 buys the best vehicle warning light in existence — the FEDERAL Beacon Ray! If your department is one of the few not so equipped — don't delay — order **now!**

Write for catalog 300 on FEDERAL sirens and lights.

Get there quicker and safer- the life you save may be your own!

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Volunteer Firemen!

Clear Your Way SAFER, FASTER with New, Emergency

ROAD-O-LITE

Revolving Red-Flasher Light

IT ROTATES!

- Throws Brilliant Beam 1200 Feet Ahead
- No Installation — Just Plug Into Car Lighter Socket. Attaches Instantly to Auto Roof, Fender or Hood

Handy, rugged ROAD-O-LITE is specially designed for emergency fire calls. Just attach to roof, fender or hood of car, then run cord through window and plug into lighter socket. Powerful, top-quality rubber suction cup holds light securely in place. Fits easily in glove compartment. Can also be used as warning light, stationary or revolving, in other emergencies.

ONE-YEAR WRITTEN GUARANTEE

- Heavy duty suction cup sticks or stands anywhere
- Heavy-gauge steel case, red baked enamel finish
- Choice of 6-volt or 12-volt
- Precision electric motor needs no oil
- Complete with clear and colored lens of your choice
- U. L. approved on-and-off switch

Order Today! Or write for details and quantity discounts

ONLY $9.95 postpaid

Complete with cord, plug, 2 lenses (red and clear). *Send check or money-order.* (Or, order C.O.D. and pay postman $9.95 plus C.O.D. fee.) *Specify 6-volt or 12-volt.*

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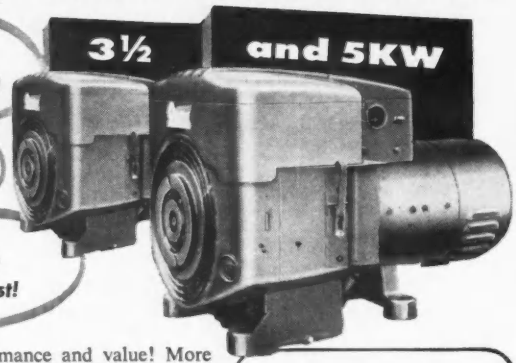
New ONAN CCK Electric Plants

MORE OUTPUT *per pound of weight!*

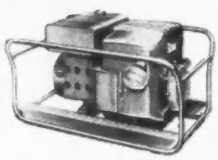
MORE OUTPUT *per gallon of fuel!*

MORE OUTPUT *per dollar cost!*



Way ahead in performance and value! More powerful, two-cylinder, air cooled Onan gasoline engines of 4-cycle, horizontally-opposed design give smooth, quieter, effortless performance. Short stroke and moderate speed cut engine wear, give longer life. Quality features include rotating Stellite-faced exhaust valves, solid Stellite valve seat inserts, full pressure lubrication. Onan's exclusive Vacu-Flo cooling system available for difficult or "buried" installations.

Completely Onan-built, with Onan gasoline engines direct-connected to Onan all-climate generators in compact, rugged units. Available in stationary, portable and standby models with a wide range of accessories.



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Available with carrying frames or 2-wheel dollies. Easily portable. Other Onan portable models: 500 to 10,000 watts.

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Radiation Hazard

IN A FIRE involving radioactive materials, fire departments encounter a condition which is not present in an ordinary fire. This is the danger that men may be exposed to nuclear radiation. Such radiation cannot be seen, smelled or detected by other senses.

A recent case which illustrates this danger has been brought to light through the alertness of W. J. Scott, Fire Marshal of the Province of Ontario. He has been giving this problem special attention and diligently following its development both in his own jurisdiction and elsewhere. The Ontario Fire Marshal's Office has been receiving from the Canadian Government notification of all shipments of radioactive materials into the Province. His office has a routine for notifying the local fire departments concerned.

Where radioactive materials are stored in significant quantities, the area must be marked with signs so that fire departments and others can know about the hazard. Here's one reason why.

A fire that occurred in a laboratory doing metallurgical research at the University of Toronto on March 4 did extensive damage to a 3-story brick-joisted building. The reason for major damage to the building was that, in this laboratory, there was considerable storage of hydrogen which was released and burned. (The circumstances of the hydrogen release might be of importance, but this story is devoted to the radioactive material problem.) A hydrogen explosion blew out windows and the glass in a door in which radiation warning markers were pasted, and the fire department had no warning that radioactivity was present in the laboratory. In this fire at the University, the loss of signs posed a problem of determining how much radiation had been present and what the possible exposure had been to fire fighters.

The best storage of radiation detection instruments in the city available for such emergencies was at the laboratory where the fire occurred, and those instruments were largely destroyed. The Fire Marshal's Office, in preparing for just such an emergency, had obtained

...re in Ontario

its own instruments. These were loaned to members of the University staff, who were able to check the firemen and be reasonably sure that they and their equipment were, in fact, free from contamination.

By this investigation of the fire, the Fire Marshal could assure the Chief of the Toronto Fire Department that none of his men suffered dangerous radiation. Nevertheless, he recommended that the individual medical records contain a notation to the effect that the men were at a fire involving radioactive polonium-210.

In this fire the only radioactive material which became involved was 0.5 millicurie of polonium nitrate. It was being used in experimental work at the time, and it was not contained in the usual lead shield but was in a glass bottle underneath the protective fume hood in a laboratory room. The bottle broke during the fire and the liquid polonium nitrate was apparently mainly absorbed in the blotter on which it was standing and the material of the hood, and was not dissipated generally throughout the laboratory. Very careful checking the following day showed that only the laboratory equipment inside the fume hood became contaminated and that it was unlikely that any contamination escaped.

Other radioactive material was also stored in this building, but the safety containers for all of these items were undamaged. These were comparatively small sources of beta and gamma radiation totalling about 125 millicuries. The polonium-210 involved in this fire is called an alpha-emitter and is dangerous principally if taken internally.

This fire illustrates the importance of keeping track of where radioactive materials are and making sure that firemen know about them, even though the signs may be blown away or destroyed.

This was the second Ontario fire within recent weeks in which radioactive materials were involved. In the other instance the protective containers holding radioactive materials were undamaged, since the fire stopped some feet away. No radiation hazard developed.

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INDEX TO ADVERTISERS

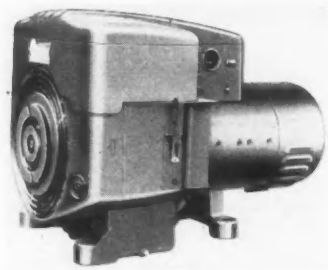
	Page
American Fire Apparatus Company	35
Audio Equipment Company	4
Bi-Lateral Fire Hose Company	34
V. H. Blackinton & Company, Inc.	23
Cairns & Brother, Inc.	24
Circul-Air Corporation	26
W. S. Darley & Company	29
Federal Sign & Signal Corporation	31
Gordon & Pope Supply Company	28
Hale Fire Pump Company	31
Halligan Tools	33
Harodikes Incorporated	30
Kohler Company	22
Mack Manufacturing Corporation	27
Midwestern Safety Mfg. Company	30
Nielsen-Rionda, Inc.	28
D. W. Onan & Sons, Inc.	32
Powhatan Brass & Iron Works	33
Rockwood Sprinkler Company	3
Seagrave Corporation	2
D. B. Smith & Company	25
Stephenson Corporation	20
Sterling Sales Company	32
Waterous Company	21

WHAT'S NEW IN FIRE EQUIPMENT?

Transistorized Microphone

Motorola Communications and Electronics Inc., 4501 W. Augusta Blvd., Chicago 51, Ill., has announced its first transistorized dynamic microphone for mobile radio applications. The new accessory reportedly provides unprecedented mobile transmission quality comparable to that of a base station. The microphone features a rugged specially designed dynamic element employed in conjunction with a built-in transistor preamplifier. The transistor preamplifier, an integral part of the microphone, boosts the dynamic output to conventional transmitter input level, eliminating the need for preamplification at the transmitter. This technique overcomes the noise pickup problem inherent in mobile installations.

It can be conveniently mounted or held near the operator's ear to overcome high ambient noise. Further information can be obtained by writing to the manufacturer.



Air-Cooled Electric Plants

Two new electric generating plants in 3,500 and 5,000-watt AC sizes have been manufactured by D. W. Onan & Sons Inc., Minneapolis, Minnesota. Models 305CCK and 5CCK are powered by a 2-cylinder gasoline engine and, according to the manufacturer, are designed for installations where quiet, smooth running performance is essential and where installation space is at a premium. There is a variety of models and voltages to fit every type of mobile, portable or stationary electric plant application in their watt range.

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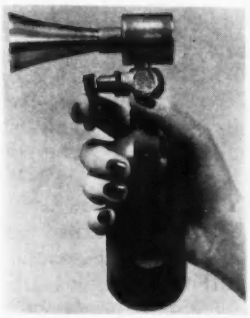
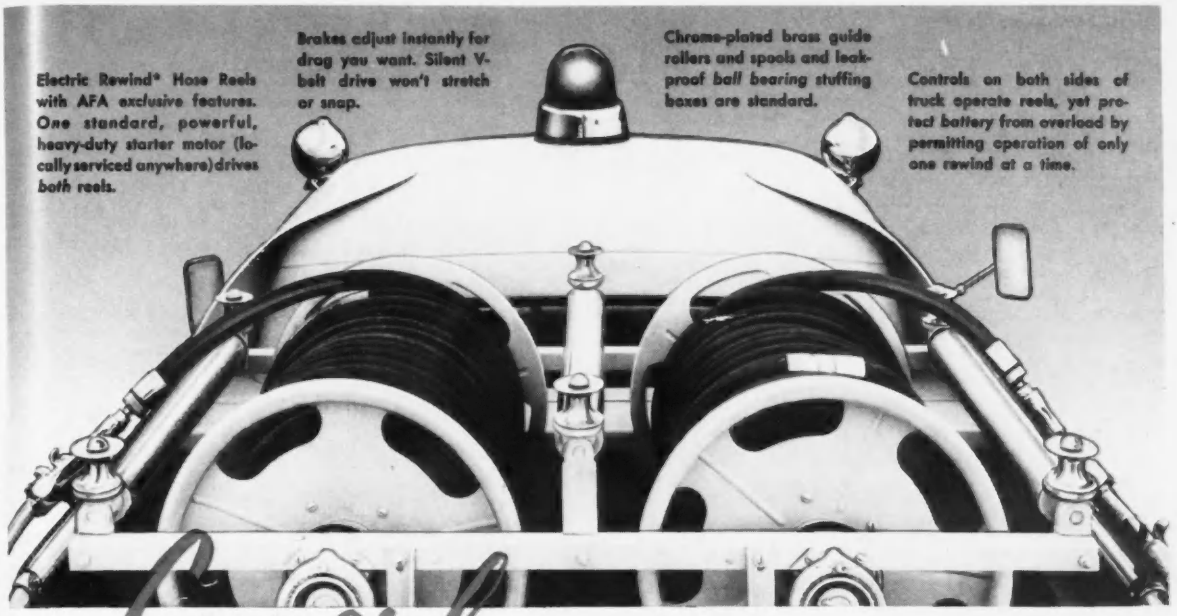
New Power Converter

Information about a new power converter, UPC-100, can be obtained from Industrial Radio Corp., 428 N. Parkside Avenue, Chicago 44, Illinois. Frequent replacement of internal dry batteries used in portable 2-way radios can be eliminated by use of this unit which provides all the necessary power for any portable using $1\frac{1}{4}$-volt filament tubes. The power converter operates from a storage battery as well as from 115-volt AC power lines. An external voltage selector switch is the only adjustment required when changing type of power source. It enables an operator to use his portable 2-way radio in cars, cranes, lift trucks, aircraft or as a fixed base station powered from the utility lines. A permanent mounting cradle for use in vehicles is supplied with the power converter. Snap fasteners permit the unit to be easily and quickly removed for transfer to another vehicle or for indoor use. Three cables with appropriate connectors are also included.



Unique Signaling Device

A new type of hand-held emergency "Guard-Horn" which can be heard more than 1,000 feet was announced recently by the Falcon Alarm Company, Inc., of Summit, New Jersey. The self-powered units are designed for persons in hazardous jobs who require self-contained signaling devices. The pound-and-a-half units are powered by freon gas and will deliver about 180 seconds of intermittent warning blasts before requiring refilling. Field tests show that the horn's sound reaches a volume of 110 decibels. These signaling devices consist of four-inch-long steel cylinders topped by specially-engineered horn assemblies. Finger-operated toggle switches control the flow of gas through diaphragm-type horns and may be locked into full open position for sustained operation. The units are equipped with special clips so they may be worn on workers' belts. The cylinders may be returned to the factory or sent to qualified refrigeration servicemen for recharging. Further information is available by writing to the manufacturer.


Electric Rewind* Hose Reels with AFA exclusive features. One standard, powerful, heavy-duty starter motor (locally serviced anywhere) drives both reels.
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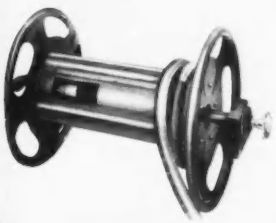

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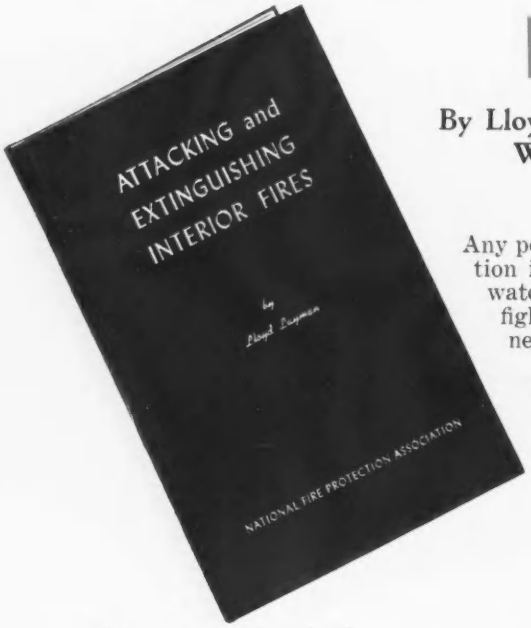

By Lloyd Layman, former chief of the Parkersburg, West Virginia, Fire Department and author of "Fire Fighting Tactics."

Any person interested in fire control will find useful information in this book. Chief Layman's provocative theories on water fog application have commanded attention from fire fighters throughout North America. Two printings were necessary to meet the demand for the first edition.

Now, new experience with water fog application has led the author to prepare a second edition. It incorporates suggestions by fire department training officers of Boston, Massachusetts, and other large cities, where the first edition has been used as a training text. It also includes discussion of the use of masks by fire fighters who are operating fog nozzles. Other new topics include the possible effect of fog streams in situations favorable to backdraft or smoke explosions, and use of fog in combating cellar fires.

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